

User Guide

LENA Support

Version 1.3.1.4

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Chapter 1. Overview

1.1. LENA! " # \$ % & ?

LENA! Web Application" # \$ % & ! ' () * + , - .) / O 1 2 3 4 5 6 7 8 9 : ; < = .

LENA! > ? @ A 4 # \$ % B C D & ! Server C E 6 F < B G H @ I J K L & M N * Web UI M O P Manager Console J < : 8 Q R = . S T U ! Manager Console" G V Server W X Y Z Parameter W [\] C E ^ _ ` a " b c d e f g e R I h , LENA i P S T U j k @ A U X / U I W I J 4 5 6 7 8 9 : ; S T m n o & p q r S T U s t u v d S T w " x y & z 4 5 6 7 8 K { p | " } ~ e R = .

LENA! ' < Z • Z / € s • , f , m # 4 5 6 7 8 ... † U 6 J Y Z = ‡ ^ P ... † ^ & • B % Š & z = < * Ē P M • " C D * = .

1.2. LENA ' (

) * + ' ,

LENA Web Application Server! Ž S WASm \$ V M ` . • , Application Deploy. • P • • " < : ' ' , CPU/Memory a U " S T " • . < • • - ' = .

Opensource - . , / O

LENA Web Server, LENA WAS! Opensource Base J - — 8 ~ ™ * Opensource Š f . " > œ * = . Opensource M O I J • . 3 Web Application < ž t P e [Ÿ < LENA m @ T - J i f Effort B € E ¤ ¥ g e R = . | * Library \ W [K { & z § " M © " S T & J Vendor ª « . " V ¬ & z S T U P I T Ownership" - k g e R = .

Multi-Server 1 2 3 Centralized Operation

z ® LENA Web Server LENA WAS B & ° P Cluster J ± " e R 8 Single Operation I J z ® Server B ` ² m C 8 g e R = .

4 5 1 6 7 8 9 : ; < = >

4 5 6 7 8 9 : ; " ... † & M m Ē L * = < * Ē P M • " C D * = . Template M O P ^ 3 & ' u ´ Server W X Server µ C M • " < T & z " & ! - . Set" ¶ r ² ^ . m - ˆ g e R = . Topology View B G V Server + ¹ ^ - . \ _ ` [> B * ° m » A g e R 8 O ² . " • • g e R = . Dashboard B G V ... † ¼ A ² % ½ P . • — ¾ a " » A g e R = . ¿ À m Multi Account K L B G V Ä Ä / U " P Ä Ä Å * W [< O • & h , ... † U Action Tracing, W [Æ , [> History Ç @ \ Restore M • " C D * = .

1.3. LENA ? , @ A 3 B @ C D

LENA! Binary Package B G V C D < - h ¿ . m () * + , - .) / B 1 2 & ' R = . - .) / ! È d É Ê Ë J ° Ì 8 Í = .

¥ LENAB ... † K L & M N * Management Module J LENA Manager Console F LENA Node Agent O 1 2 3 = .

¥ > ? @ A Web Service B Î Ĩ & ! Server Module J LENA Web Server, LENA WAS (Web Application Server) B 1 2 3 = .

= Đ r] - .) / ž • Ñ W Ò F 2 Ó < m Ô ´ Ē) Õ Ö " = x = .

1.3.1. Management Module

LENA Manager

LENA Manager! Web UIB GV LENAP +, U" /M• " W[\ C8g e Rt Ø WI 3 Web Application<=. LENA Packagem " \$3 %ËÜÚB GV WX \ M` " g e R=. LENA ManagerB GV Server WX/KLB ef &ÜÜ Node Agent \ Advertiser` P _` " - . VÝ * =.

=Ðr LENA Managerm# CD&! ¢\$@A M• F ÕÖm ¢V WÒ* =. ÞBm WÒ–p qr • ÑSà6m ¢V#!] ÁÃž áÃâ ãT" ä' * =.

¥ Dashboard

LENA Node, ServerP U" —¾F Event » A

¥ Server

LENA NodeP aØ,] åæž #çB WX, W[KL \ M` /¼p C8

è System

LENA Node, ServerO KL–! é/ ³ N. &° P System&Nm! z ® NodeB aØg e RI °, &° P Node! z ® Systemm ¼µI J aØg e Ý=.

è Node

Node Agent` 1:1J ¢ê–! ÕÖ. Managerm# " ëpm R! Serverm Òì " ef &M NVí Node AgentB GVÝ * =.

¥ Resource

LENAm# CD&! Module< Þî pi LENA Server` ï Ã&d _` –! U" m ¢V ÒÑB [P2I J ð ResourceJ ST* =. Resource! LENA WASž J Local W[" g e Rpi , Resource ÁÃB GV Global&d W[&z WASm# Import&! ñ| " GV ¼µ3 • ò" óg e R=.

è Database

DBMSP IP, Port, Driver a ôL@ ÒÑB [P. &° P DBMS` 1:1J ¢ê3=.

è Datasource

DB Connection Pool" LENA WASm# - . &M NV JNDI Name, Url, User ID/Passworda" p[* =. &° P Database&Nm z ® DatasourceB - . g e R=.

è Application

LENA WASB GV >f g ApplicationP NX` Context PathB p[* =.

¥ Topology

LENA Manager• m WX–' _` - . –8 R! LENA Web Server, LENA WAS aP - . —¾" Topology Diagram æ| I J §—* =. < M• " GV ServerP ^³ * WX` M` /¼p C8t O• &=.

¥ Diagnostics

LENA Node` Serverm ¢* U" +î ZõF ¿m _I 3 =< * M• ö÷&ø=.

LENA Node Agent

LENA Node Agent! LENA Managerm NodeB aØg ù Node` 1:1J ¢ê–h, LENA Packagem Mú@I J WX–8 R8 " \$3 %ËÜÚB GV M` g e R=. Ě) úgr LENA ManagerB GV Òì * Node &NP Serverm Òì " üL&! ýF +î Zõ \ • þ' <ZB LENA ManagerJ ; ý&! M• <=. ôL #ç Ĭ 1ÕP Node AgentB WX&! ý< Mú<pi , () m Ôs z ® ÕP Node AgentB - . g e R=. LENA Web Server, LENA WAS! LENA Node &Nm - . –h, LENA Node! &° P System &Nm - . 3=.

1.3.2. Server Module

LENA Web Server

LENA Web Server! [@! " #B i ÿg e RI h LENA WAS Reverse Proxy æpJ _` &z
LENA WASO CD&! Web Application # \$%P front-end ûg" ef * =. ¿ \$ í %@I J
=< * ÇO M• " <Tg e R! ' , Domain/URI MO &M \ Load Balancing M• F > .
' <8(SSL)B CD&! ý< ¢§@<=.

LENA WAS (Web Application Server)

LENA WAS! Java Web Application" >f &z Web Application # \$%B CD* =. DB
Connection Pool" <T &M N* Datasource _` M• " 1 2&' R=. Java Class () "
üL &M N* Servlet EngineF JSP () " üL &M N* JSP EngineI Ji - . - 8 RI h WAR
TypeP Web Applicationi >f g e R=.



LENA WAS! ãY@I J Advertiser Module" ö÷ &' RI h <! LENA WASP
JVM ãY +î Z õ ¬FB JMXB GV e%&z LENA ManagerJ i * * =.

1.4. LENA E F GH

Managerm a Ø3 Nodem! Node Agent, Application Serverm! AdvertiserO WX– 8 R=.

...† U! ManagerP UIB GV] Node Agentm Serverm ¢* C8) +(, : Start, Stop, Reload, Dump,
W[Æ„ a)" > ã' , Node AgentO <B e- &z C8B >f * =.

Node Agent, Advertiser! ĚM@I J +î Z õ ' <ZB ManagerJ i ÿ &' , ...† U! Monitoring
Dashboard¬ . r ManagerP UIB GV#] #çP U" —¾" » Ag e R=.



Figure 1. LENA Mechanism

Table 1. LENA - .) / ž WÒ

? , @A	I J
Manager	AgentB G* ServerC8¬ +î Z õ M• CD
Repository	Manager ...† " N* File/DB ö ÷
Node	Node AgentB ö ÷. Node&Nm Server Module< WX/

? , @A	I J
Node Agent	<div>- Server WX/μC/OX</div> <div>- Server M` /¼p C8</div> <div>- Server W[KL</div> <div>- Node, Web Server, WAS • p [></div> <div>- Node, Web Server U" +î Z õ ' <Z CD</div>
Advertiser	WAS U" +î Z õ ' <Z CD
WAS	Java Web Application # \$% CD
Web Server	WAS~ Reverse Proxy æpJ _` &z Web # \$%P Front-end ûg

1.5. => Spec

LENAm# CD-! M• |! %1r ÞB⁻ . =.

Table 2. CD M• F %1

; </Spec (LENA-Manager ; K)		= >
Server	Web Server	2
	Web Application Server	2
Resource	Database	2
	DataSource () O)	2
	Application (WAR)	2
Topology		2
Security		2
Diagnostics	Monitoring	2
	Í ³ /¢ê	-
Patch		2

Chapter 2. Log In/Out

Managerm J ğ AF J ğ P3&! M• " CD* =.

2.1. Log In



Figure 2. Manager Ã« k Ü

J ğ A 4<p &³ 56m! WX3 ğ j <, • 6m! M©p" _7üOM©–8 R=.

J ğ A ² t², 78 <• P \$ř 8š 9: O ; <&! „ • Vř Ĭ Ĭ Ĭ J J ğ A" g e Ÿ=. <= „ • console" GV O%>, B ?Mk VÝ* =. (UŇ* ãTr Appendixm# 'Manager P admin O%>, ?Mk' à@" ä' * =.)

2.2. Log Out

Manager • ³ • 6P **L MNO** " <T&z J ğ P3" g e R=.

2.3. Theme PQ

Manager • ³ • 6P **RSTU MNO** ÁÂP Dark Theme ÁÂB GV ABB W[g e R=. s<Ú +, ¯ =Ë +, É Op ¼m í %< O• &=.

Chapter 3. Dashboard

Managerm# KL–! ² %½ ž - . [> , U" +î Z õ, <CÚ, s<•% aP [> B) Š&z
CD* =.

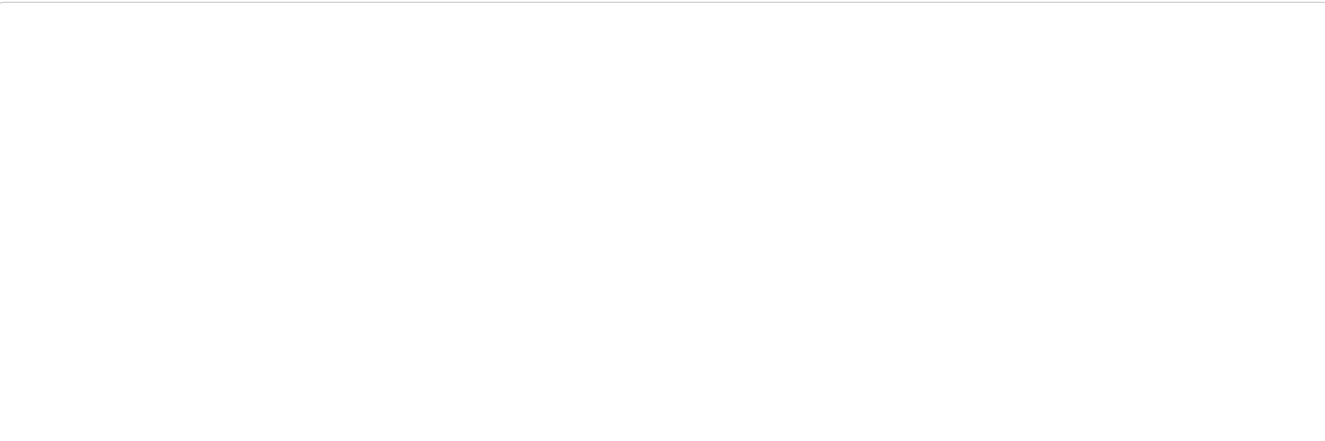


Figure 3. Dashboard

k Ü 56P ² %½ @Øm! J ĵ A * STUmd Å* < R! ² %½ @Ø< CD3=. Allr Å* < R!
+, ² %½P [> B GH&z > z `` =.

Table 3. Dashboard à @

VW		I J	X)
INVENTORY	Node	System m 1 2 3 NodeP e	Ê D: NodeP Ž E ž F e ¥ Web type : Web ServerB WX g e R! ^ , e ¥ WAS type : WASB WX g e R! ^ , e
	Server	Systemm 1 2 3 Server Ž E ž F e	
	Node Status	Systemm 1 2 3 NodeP U" (CPU, Memory, DISK) ST G • p	Ê D ¥ High / Middle / Low ¥ Not working : [p • pP Node(Agent) F e
	Server Status	Systemm 1 2 3 ServerP U" ST G • p ¥ Web : CPU, Memory, Thread HÈ ¥ WAS : Heap Memory, Thread Pool HÈ	Ê D ¥ High / Middle / Low ¥ Not working : [p ! ! Hang • pA # Ç P F e
CHECK	Modified Server	Systemm 1 2 3 Server¼ ÷ M` < () * # Ç I ÷ z Y	
RESOURCE	DB Resource	RESOURCEÁÂm# a Ø– 8 K L– ! Database~ Datasource e	DatasourceP Ê D ¥ Used : WASm# ST ¼A Datasource e ¥ Not Used : WASm# 5ST ¼A Datasource e

VW		I J	X)
LICENSE	License Status	^ , 6P s < í % • p (Trial s < í %P å ") e ¡ ! • Ts < í %P å ") e (ª J) UM'' 15) ¡ YZ) §²)	

Chapter 4. Server

Node \ WAS, Web ServerB KL &M N* k Ü" CD* =.

K[System ã P Node \] Serverž ŒeB » A&' , >² ^I J Node \ Server • pB GH@I J KL g e R=.

4.1. System

Systemr =eP ServerB Op! LL@A ¿ M<=. "DefaultSystem"" Mú@I J CD&h STU! System" <. , e[, NC g e R=.

4.1.1. WY

System @Ør k Ü 56m ÚL æpJ CD3=.

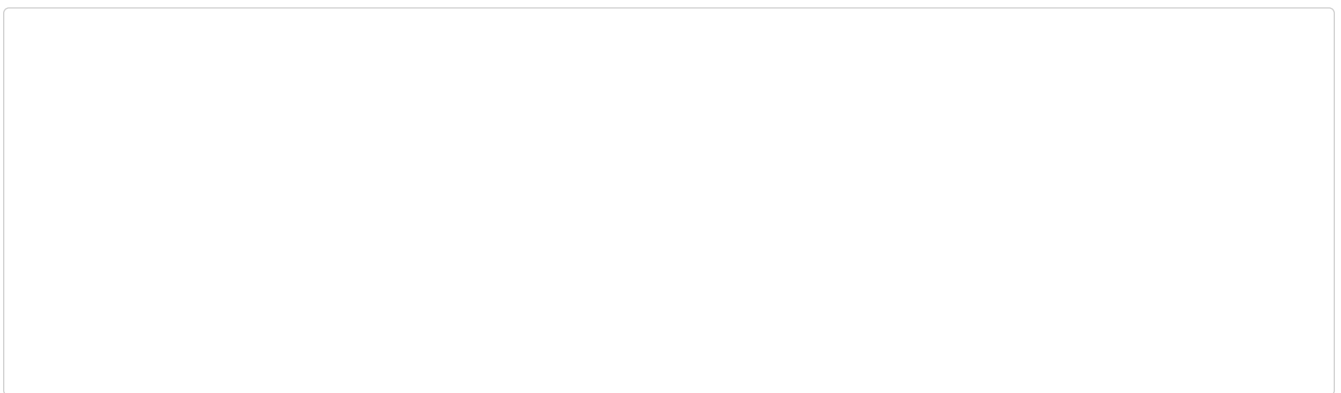


Figure 4. System List

4.1.2. ZY

1. ZY(+) [\ " €O&z @Øm "Create System" " <. * =.
2. <. g ² %½ Ò" EP* QRZSBEP* =.
3. OK [\ " €O&z Tœ* =.

!

—÷ J ¿ A* STUP Å* < Vİ Systemm áU3=. V, J ¿ A* STU^{-`}) * Å* " OÍ STUmdi Vİ System< WX3=. (Node, Server, Resource `) &d @T/)

4.1.3. R]

1. e[g System" í %* =.
2. R] (^_) [\ " €O&z í %* SystemP <Y" Æ„ * QRZSBEP* =.
3. OK [\ " €O&z Tœ* =.

4.1.4. ` =

1. NCg System" í %* =.
2. ` =(-) [\ " €O* =.
3. OK [\ " €O&z Tœ* =.

!

&Nm NodeO I ÷ &! Systemr NCg e Ÿ =. V, Z Systemi NC O• &=.

4.2. Node

Node! =e P WAS, Web ServerB Op! ô L@A Server< =.

4.2.1. WY

Node ListB G&z] NodeB KLg e R=.

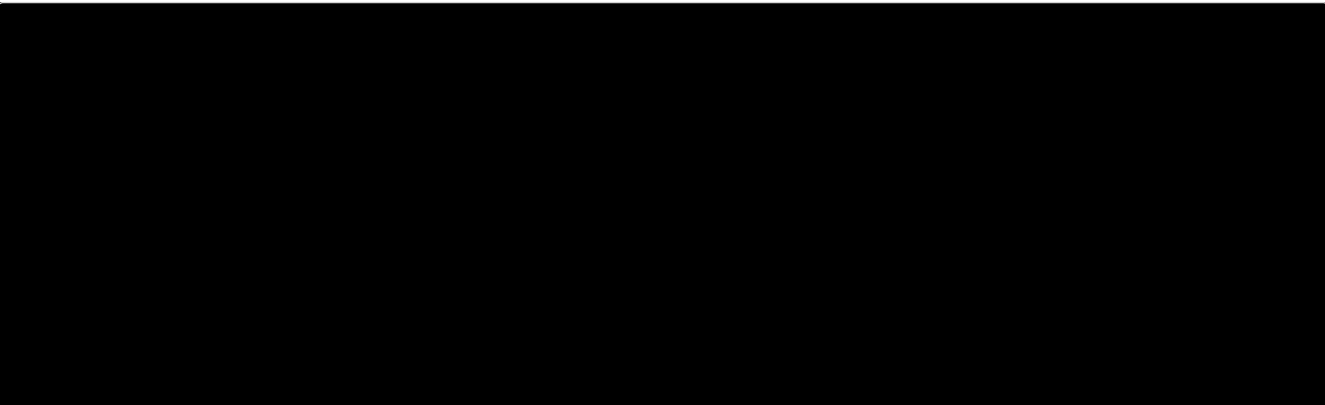


Figure 5. Node List

NodeP « . r ÞB⁻ . =.

Table 4. Node « .

VW(*! _Ra)	I J	X)
Status	NodeP —÷ • þ	ÞB ⁻ . r • þB CD2 ¥ Started(v) ¥ Stop([)
Name(*)	NodeP < Y	
Type(*)	NodeP Type	=ÐF . r ŽE" CD2 ¥ All: +, ^a : P Server WXO• ¥ Application: WAS ⁻ Session Server WXO• ¥ Web: WEB Server WXO•
Address(*)	NodeP IPĚ /	

VW(*! _Ra)	I J	X)
Port(*)	Node AgentP Port8š	Default : 16800(Node Type< All | ! ApplicationA „ •), 16900(Node Type< WebA „ •)
Manager Address(*)	Manager IP Ě /	
+ MNO	Register [ \ | ! R] (^_) [\ " €O&z í %3 Node[> O Æ„ ¼\ " §²	
- MNO	` =(bcd) [\ " €O&z í %3 Node[> O NC/ " §²	
	Action(É) [\ " €O&Ü JAVA Home W[F Start/Stop" e f g e R! ÁÂ CD	

4.2.2. Install

1. Install [\ " €O&z Node[> a Ø" `` \$* =.
2. NodeP « .] " EP* =.
3. Save [\ " €O&z Tœ* =.

Table 5. Install ² W[&! « .

VW(*! _Ra)	I J	X)
Node Type	NodeP Type	=ÐF . r ŽE" CD2 ¥ Application: WAS WXO• ¥ Web: WEB Server WXO•
Node Name(*)	NodeP <Y	
Node Address(*)	NodeP IPĚ /	
Node Port(*)	Node AgentP Port8š	Default : 16800(Node Type< All | ! ApplicationA „ •), 16900(Node Type< WebA „ •)

VW(*! _Ra)	I J	X)
User(*)	Node >f STU I [	Node Type< ApplicationA „ • , root I [I J >f g e ŸĐ. Node Type< WebA „ • Web ServerP PortB 1024< &B STVŸ&! „ • mi root ST.
Password(*)	Node >f STU I [\$i 8š	
SSH Port	Vİ Serverm Ā« g SSH 1 Ú	
LENA Home	Node AgentO WX ^ NX	
JAVA Installation	Java WX z Y	
JAVA Home	WX3 JAVA „ J	

! Install M• r Linux f „ m#i p“ * =.

4.2.3. Register

1. Register [\ " €O&z Node[> B aØ O• * • pJ Ą „ * =.
2. NodeP Name, Type, Address, Port, Manager Address(Mú] < CD/) « . " EP* =.
3. Save [\ " €O&z Tœ* =.

! ¥ Manager IP! NodeP host IPJ U` EP3 =.
¥ _Ú>È - . m Ôs U` EP3 IPO >C _Ú>È IP` =´ „ • O ; <g e
R =.
¥ <ù! Manager IPB e[&z EPVŸ * =.

4.2.4. R]

1. R] (^_) [\ " €O&z Node[> B e[O• * • pJ Ą „ * =.
2. NodeP « . " e[* =.
3. Save [\ " €O&z Tœ* =.

! ¥ 1 Ú [` <° ñk™ [` Ą „ a m PV NodeP Address° PortB Ą „ VŸ &!
„ • , agent.confP W[[> B e[Q Node AgentB ÷M` * =.
¥ < ù Ą „ 3 [> B Managerm#t a e Rt Ø NodeP Address` Port[> B
e[&z EP* =.

!

e[3 [> B Tœg ù 'Occured Read Timeout' ÁÑpO ; <&Ü ÞBP „ • B » A* =.

¥ Node AgentO Þb = ´ c m# 1 ÚB ST&! „ •

¥ Node AgentO Hang< de „ •

¥ Network f CO R! „ •

4.2.5. ` =

1. **bcd** [\ " €O&z Node[> B NC O• * • pJ Æ„ * =.

2. **Save** [\ " €O&z Tœ* =.

!

Node &Nm ServerO aØ– 8 R! „ • Vİ NodeB NCg e Ÿ =.

!

Uninstallr Linux f„ m#i p“ – ‘ , NCg ^ , B * Ōi í %* „ • O• &=.

4.2.6. Start

[p • pA ^ , B M` ² g e R=.

1. Node@Øm# Vİ NodeP h • 6 i j m R! **É** [\ " í %² CD–! Start ÁÂB í %&Ü k òl < ° Žm=.

2. User, Password, SSH Port8š B E P Q **Start** [\ "] ´ =.

4.2.7. Stop

M` • pA ^ , B [p ² g e R=.

1. Node@Øm# Vİ NodeP h • 6 i j m R! **É** [\ " í %² CD–! Stop ÁÂB í %&Ü k òl < ° Žm=.

2. User, Password, SSH Port8š B E P Q **Stop** [\ "] ´ =.

4.2.8. Change Java Home

Nodeˉ Nodem WX3 Server6P JAVA Home „ J B e[g e R=.

1. JAVA Home PathB e[* =.

è Node Java Home Path : Node Java Home PathB Ć%₀* =.

è Server Java Home Path : í %* #Ç 6P JAVA Home „ J B Ć%₀* =. (Web Nodem#! p“ &p qĐ)

2. **Save** [\ "] ´ =.

4.3. WAS

WASB KL&M N* k Ü" CD* =. Nodem WX* ServerP aØ, e[, NCB ef &h, ¿ \$ ServerP WX, Cn \ µCB g e R=.

4.3.1. WY

WAS ListB G&z] WASB KLg e R=.

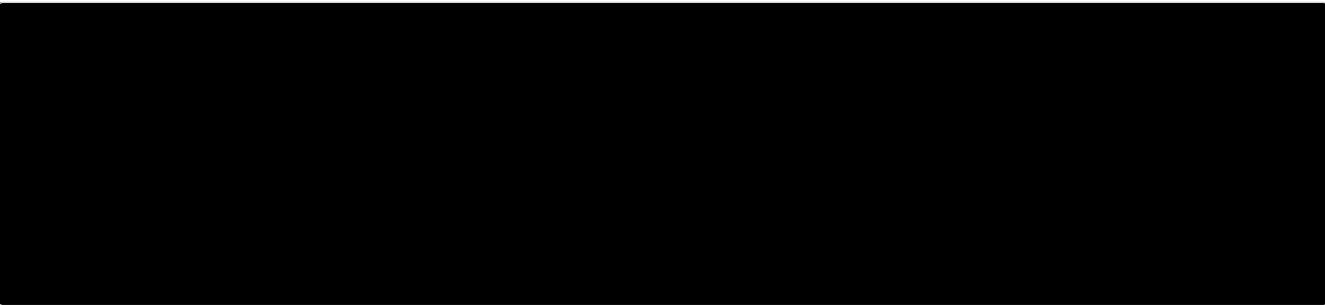


Figure 6. Web Application Server List

WASP « . r ÞB´ . =.

Table 6. WAS « .

VW(*! _Ra)	I J	X)
Status	ServerP • þ	ÞB´ . r • þB CD2 ¥ Started(v) ¥ Stop([) ¥ Error(!)
Name(*)	ServerP < Y	
Address	ServerP IPĖ /	
Server ID	ServerP ID	
Type	ServerP å æ	=ÐF . r ŽE" CD2 ¥ Standard ¥ Enterprise/EE ¥ Enterprise/SE
HTTP Port	HTTP 1 Ú8š	
AJP Port	AJP 1 Ú8š	
	ServerP ² • \ ª J	
+ MNO	Register [ \ | ! R] (^_) [\ " €O&z í %3 Å* [> OÆ„ ¼\ " §²	

VW(*! _Ra)	I J	X)
-MNO	`=(bcd) [\ " €O&z í %3 Å* [> O NC/" §²	
	Action(É) [\ " €O&Ü Forced StopF Forced RestartB e f g e R! ÅÃ CD	

4.3.2. Install

1. **Install** [\ " €O&z ServerP WXB `` \$* =.
2. Server Type, Server ID a" EP* =.
3. **Save** [\ " €O&z Tœ* =.



¥ Nodem >C WX–8 R! Server` Managerm# KL&! ServerP [> m!
o<O R" e R=. (consoleMO WX ²)

¥ Server ID ¼µ 9: O ; <&! „ • , Register M• " <T&z WX3 Server [> B
ÇOJ »AVÝ * =.

4.3.3. Clone

1. **Clone** [\ " €O&z ServerP µCB `` \$* =.
2. Node Listm# µCg ServerB í %* =. <ù Clone Server ID, Clone Service PortO U` I J
EP3=.
3. Clone Server ID` Service PortB " &!] I J e[* =.

(Include External Source! =´ ^, J #çB µC&! „ • STO• &h, µCg #çm p1–8
R! 8qLr<; () t 2Ó µC&! p zYBW[* =.)

4. **Save** [\ " €O&z Tœ* =.



¥ Nodem >C WX–8 R! Server` Managerm# KL&! ServerP [> m!
o<O R" e R=. (consoleMO WX ²)

¥ Server ID ¼µ 9: O ; <&! „ • , register M• " <T&z MI m WX3 Server
[> B ÇOJ »AVÝ * =.

4.3.4. Register

1. **Register** [\ " €O* =.
2. aØ&Û! ServerB í %* =.
3. **Save** [\ " €O&z Tœ* =.



System > Application Server List Tabm# t WXO O• &=. ³ , Node Listm# WXg
NodeB í %VÝ * =.

4.3.5. R]

1. **R]** (^_) [\ " €O&z Server[> B e[O• * • pJ Æ„ * =.
2. ServerP « . " e[* =.
3. **Save** [\ " €O&z Tœ* =.

4.3.6. ` =

1. **` =**(bcd) [\ " €O&z Server [> B NC O• * • pJ Æ„ * =.
 2. **Save** [\ " €O* =.
 3. **OK** [\ "] vÜ NC åæ" í %&! I < ~P3=.
- è Unregister : Manager DBm#i VÍ Server [> B NC&' ôL@A Server enginer å p (ÇQ
Register [\ " GV =² aØ O•)
- è Uninstall : Manager DBm# VÍ Server [> B NC&' ôL@A Server enginet NC
4. Uninstall í %² ,J ç s t u L NCz YB v! I < ~P3=.



WASB NCg „ • # \$% C8(ADMIN > Security > Rule Applying ÁÃ)P @T ¢•
 @Øm# VÍ Server! NC3=.



ADMIN > Preference > Manager Environment ÁÃP Manager Configuration
 † Üm# use Server Delete Protection] " trueJ W[&! „ • Managerm# #ÇO
 uninstall–! ý" ñp g e R=.

4.3.7. Start/Stop

Single Start/Stop

1. **Stop** [\ " €O&z ServerBª J * =.
2. **Start** [\ " €O&z ServerB² • * =.



¥ ServerB¼p² WAS O # \$%¼A +, • ò< wm Qª J 3=.

¥ **General** xP Shutdown Timeout ² ^ <Qmt • ò< w° p q r „ • - CJ
 ¼p3=.



ServerB² • &Ü J ç () " y e R! k ò< >f 3=, k ò" GV ServerP [•
 M` z YB » Ag e R=.



² • O• * • p) „ • mi **Start** [\ < z . k 3=.

Multi Start/Stop

1. ² • { rª J &' U &! µeÕP ServerB í %* =.
2. Server @Ø &³ P **Multi Action** [\ " €O* =.
3. k òI m# Action Type" í % Q **Action** [\ " €O&z µeÕP Serverm ¢* ² • { rª J
 • ò" e f * =.

!

k ò k Üm# Start / Stop Òì <Qm! k ò" | } s t) + * Òì < ¼p– p q! =.

Forced Stop/Restart

1. Server @Ø Oœ • 6P ef ; <(É) [\ " €O* =.
2. - C ª J { r - C ÷² • " ef * =.

!

- C ¼p, ÷² • " ef &Ü —÷ # \$ %¼A +, • ò< V² ¼p– J ĚPVÝ* =.

4.3.8. I]] / 1 2

ServerP W[[> B Æ„ &! M• " CD* =. Server @Øm# Æ„ &Û! Server Ò" í %* =. Standard EditionP „ • General, Session, Logging, Web Config, Environment, Properties, Config Tree, Historyx " CD&h, W[[> e[² ~ò" &z µ" < O• &=.

!

Server W[" Æ„ g „ • e[3 SàP O†" N&z ServerP ÷M` < () &=

General

ServerP) O@A W[[> B KL * =. Port[> , Connector[> , Stuck Thread K{ W[" e[\ Tœ g e R=.

W[[> P • ÑãTr Þßˉ . =.

1. Server Info

ServerP Ě) W[] " ° Ž• =.

Table 7. Ě) W[

VW(*! _Ra)	I J	X)
HTTP Port(*)	HTTP 1 Ú8š	
AJP Port	AJP 1 Ú8š	HTTP 1 Ú8š - 71 (U` I €)
HTTPS Port	HTTPS 1 Ú8š	HTTP 1 Ú8š + 363 (U` I €)
Shutdown Port	Shutdown Òì f U• " , M N* 1 Ú	HTTP 1 Ú8š - 75 (U` I €)
Install Path	Server WX „ J	
Java Home Path	Java Home „ J	
Minimum Heap Size(m)(*)	WASm W[g é / Heap S < f (Megabyte)	Default : 512
Maximum Heap Size(m)(*)	WASm W[g é ¢ Heap S < f (Megabyte)	Default : 512

VW(*! _Ra)	I J	X)
Application Base	ApplicationP Base s t u L	ServerO stop • p < n ° , appBasem deploy < 3 Application < Ÿ " „ • mi e [< O • & = .
JvmRoute	ServerP Unique* Identifier	System Property m W[- 8 R!] " • í 2. Ÿ " „ • server.xmlP] " ST (Hostname + PortP WHI J < . /)
Auto Deploy	8qLr < ; Æ „ ² U` Deploy z Y	Default : false Applicationž DocBasem war () " ÷ ò J , g „ • ¥ p /
Deploy On Startup	WAS M` ² Application Deploy z Y	Default : true
Shutdown Timeout	Server ^a J ² > f ¼ A • ò < I ÷ g „ • Φ M & ! ² ^ (?)	Default : 86400

2. Connector

Serverm# ST & ! Connector W[] " ° Ž • = .

Table 8. Ě) W[

VW(*! _Ra)	I J	; ga
Protocol Type	„ J u ... å æ	HTTP/1.1, AJP/1.3
port	1 Ú 8 š	
redirect Port	Redirect 1 Ú	HTTPS Port ^{-`})
connection Timeout	† ‡ ; Ž \ P 3 (ms)	HTTP : 20000, AJP : 60000
URIEncoding	URI byteB Æ f & M N* Character Encoding	UTF-8
server	Http Response m Φ * Server HeaderB ÷ [P & z Server [> ^ ~ " ñ p	Server
maxThreads	ConnectorO < . g e R! é Φ Thread e	256
minSpareThreads	Connector < . ² » > & ! é / Thread e	10

VW(*! _Ra)	I J	; ga
maxQueueSize	Request Queue P é ¢ ^ <	Integer.MAX_VALUE
packetSize	AJP packet È M	8192
enableLookups	DNS LookUp ST z Y. ST &p q" ² . • m å L &=	false
compression	HTTP message Body %¸, z Y (off, on:Texti , force;j H)	off
tcpNoDelay	TCP OŠ" Delay Ý < j ý	true

3. Stuck Thread

Stuck ThreadP W[] " ° Ž • =.

Table 9. È) W[

VW(*! _Ra)	I J	X)
Threshold(s)	Stuck ThreadB | Ž &M N* é / ² ^ (s)	
Interrupt Thread Threshold	Stuck ThreadB ¼³ &M N* é / ² ^ (s)	Stuck Thread < Ž < Q n? Æ ª J ² SÛÜ "Threshold+n"] EP

4. Service Point

Endpoint AddressP W[] " ° Ž • =.

Table 10. È) W[

VW(*! _Ra)	I J	X)
Endpoint Address	WASP ¢§ # \$% ¢ ÁA È /	

Logging

ServerP Logging W[[> B KL * =.

1. Log Home

Table 11. È) W[

VW(*! _Ra)	I J	X)
Log Home(*)	Log Home „ J	default í %² #ÇWXstuL &N logs • } J W[, custom í %² Log Home Prefixà @m# J¿stuL Ž „ J EPO•
Retention Days(*)	J¿ é ¢ > K) e	Default : 0(• C*)

2. Access Log

Requestm Φ^* Access J ζ P W[] " \circ $\tilde{Z} \bullet =$.

Table 12. \tilde{E}) W[

VW(*! _Ra)	I J	X)
Directory	Log s t u L	$\alpha \Phi, J \mid !$ \$CATALINA_BASEP $\bullet \Phi, J J p[g e$ R ∂
Pattern	Logging fieldP Layout	
Prefix	Log () P prefix	
Suffix	Log () P suffix	

3. Handler

Handler W[[\succ P \bullet $\tilde{N} \tilde{a} T r$ $\mathfrak{P} \beta^-$. =.

Table 13. \tilde{E}) W[

VW(*! _Ra)	I J	X)
Name(*)	HandlerP $\in \beta \% \tilde{O}$	
Type	HandlerP $\mathfrak{A} \mathfrak{a} \mathfrak{e}$	ConsoleHandler $\bar{}$ FileHandler $\acute{}$ % O \bullet
Level	HandlerP J ζ ' \bullet	
Filter	java.util.logging.FilterP - $\text{—}H$	
Formatter	java.util.logging.FormatterP - $\text{—}H$	Default java.util.logging.SimpleF ormatter
Encoding	HandlerP Character Encoding	
Root	Root Loggerz Y	

4. Logger

Logger W[[\succ P \bullet $\tilde{N} \tilde{a} T r$ $\mathfrak{P} \beta^-$. =.

Table 14. \tilde{E}) W[

VW(*! _Ra)	I J	X)
Name(*)	Logger < Y p[
Level(*)	LoggerP J ζ ' \bullet	
Handler(*)	LoggerO \mathfrak{S}' * HandlerB ST gp $\acute{}$ %	ConsoleHandlerO Mú $\acute{}$ %



ServerP $\mathfrak{J} \zeta$ W[$() r$
\$CATALINA_HOME(\$CATALINA_BASE)/conf/logging.properties < =.

Web Config

Global web.xml P W[" KL&! kÜ" CD* =. () à@" e[* Q Save [\ " €O&z Tœ* =.

W[[> P • ÑãTr Þß⁻ . =.

1. Default Servlet

Table 15. É) W[

VW(*! _Ra)	I J	; ga
Listings	Welcome() < Ÿ" ù, Directory Listing" ' Tgp z Y	false
Input	Input buffer size in bytes	2048
Output	Output buffer size in bytes	2048
Readonly	PUT, DELETE a P HTTPÁ/, B ' T&p qĐ	true
FileEncoding	File Encoding	platform default
ShowServerInfo	Directory Listing< ' T– 8 R" ù Server [> B §² gp z Y	true
LoadOnStartup	WAS M` ² Servlet J " " # p[	1 (Đe: disable / 0: Oœ Bp•)

2. JSP Engine

Table 16. É) W[

VW(*! _Ra)	I J	; ga
CheckInterval	DevelopmentO false) ù jspP Æ„ " – S&z ÷—() gp » A&! ĚM(s)	0 (0: \$z . k / < e: Vİ ĚMJ z . k)
Development	Development z Y. DevelopmentO trueA „ • m! modificationTestInterval] " ĚMJ &z Æ„ " – S 2	true (0: á accessB= ~ –)
GenStringAsCharArray	String< . " Char ArrayJ gp z Y	false
ModificationTestInterval	DevelopmentO true) „ • m` • &! jsp Æ„ – S ĚM	4
TrimSpaces	ê™m# š' Ÿ! whitespaceB Cn&z ê™> < ÚB œ\	false
JavaEncoding	Java/ %B generategù P Encoding	UTF8
LoadOnStartup	WAS M` ² Servlet J " " # p[	3

3. JSP Page Encoding

Table 17. É) W[

VW(*! _Ra)	I J	X)
URL Pattern	Page Encoding" @T g JSP PageP URL Pattern	
Page Encoding	@T g Page Encoding" p [

4. Session

Table 18. Ė) W[

VW(*! _Ra)	I J	X)
SessionTimeout	Ń; Ž\ P3 ² ^(&)	Default : 30

5. Welcome File List

Table 19. Ė) W[

VW(*! _Ra)	I J	X)
File(*)	Directory indexJ š ~g „ • m serviceg () " " #ϢJ p[2	

Environment

JVM • ; , Start ShellP W[F System Properties(Enterprise EditionA „ • i CD)B KL&! k Ü" CD* =. () msZB GV e[* Q Save [\ " €O&z T œ* =.

- ¥ JVM Setting (\$CATALINA_HOME/bin/setenv.sh): Server >f " N* JVM • ;
- ¥ Custom Settings (\$CATALINA_HOME/bin/customenv.sh): ST U † %Ž f „ Æe W[
- ¥ Start Shell (\$CATALINA_HOME/env.sh): Server ² • " N* Shell Script



JVM_ROUTE] r z M# Ÿ Ã e[&p q' , General xP Server Info † ûm R!
JvmRoute à@P hi j ; [\ " ST&z e[* =. z M# Ÿ Ã e[g „ •
Manager DBP [> O Update– p qP DB]) XO ; < * =.

- ¥ Catalina.properties (\$CATALINA_HOME/conf/catalina.properties): ServerP Catalina W[



\$CATALINA_HOMEr WASP Mú WX s t u L < =. \$CATALINA_BASE! ú ß &° P
WASm µ e Ō P InstanceB ST&' U g ù s t u L B < . &z Instancež J
p[&z ST–pi LENAm#! WAS InstanceO 1:1 KI s \$CATALINA_HOME<
i \$CATALINA_BASEJ ST 3 =.



Mú@I J W[" e[g e Ÿ t Ø Disable – 8 Rpi , e[&' Ϣr „ • ADMIN >
Manager Environment > Manager Configuration à@m# I] [\ " €OV P ß
W[" false J Æ „ * =.

```
server. envi ronment. envshel l . readonl y=fal se
```

Properties

ServerP System Properties ~ System EnvironmentsB » A&! k Ü" CD* =. System Properties ¼
Key Properties B ž t J CD&z Server „ J , JAVAç i a P Ė) [> B » Ag e R =. ServerO

M` 3 • pm#i [> B » Ag e R=.

Config Tree

WASP WX„ J &NP /conf • } &N W[() 6" () Œ%MB GV KL g e R=.

!

Node AgentB >f &! STUO WAS W[[> () P ÄÄ Å* < R8Ý e[< O• &=. ÄÄ Å* < Ý" „ • () Write Å* < Ý8 Œ%g e Ý=! Å² pO ~P 3=.

History

W[[> P ~ð \ μ" M• " CD* =. W[[> B e[&z Tœ&Ü åæž J HistoryB KL * =. e[) ² ~ W[() Type" EP&z –É* =.

/; (k /;) [\ " €O&z í %* () P [> B y e RI h, Restore [\ " €O&z Vİ W[() J μ" g e R=.

4.3.9. Resource 1 2

ServerÁÂ &NP ResourcesÁÂB í %&Ü Vİ Serverm K{ 3 Resource[> B KLg e R! k Ü< §² 3=. Mú@I J DataSource Resourcem Φ* [> B KLg e R=.

!

WASm Resource B W[&! ñwr =ĐF . =.

¥ ÇO : New [\ " €O&z ResourceB ÇO* =.

¥ NC : Delete [\ " €O&z ResourceB NC* =.

¥ OQ9M : Import [\ " €O&z RESOURCE ÁÂm# aØ3 ResourceB OQᄁ =.

DataSource

WASP Application< STg e R! JNDI DataSourceB KL&! M• " CD* =. JNDIB W[&z Serverm# >f –! +, Application< Dâ &z STg e RI h,]] P Applicationm JNDI W[" &z STget R=.

Server DataSource W[

Serverm# >f –! +, Application< Dâ &! DataSourceB W[* =. Serverm# ST O• * DataSourceP @Ø" WXg e RI h, DataSourceP aØ, e[, NCO O• &=.

DataSourceP • pB HÈ&MN* Ä« A%Út ef g e R=.

DataSourceP «. r ÞB⁻ . =. é? kÜm# > <p q! «. r Expand all [\ " €O&Ü §² 3=.

Table 20. DataSource «.

VW(*! _Ra)	I J	X)
Scope(*)	DataSourceB STg ÊN	<p>=ÐF . r %¥„ B CD2</p> <p>¥ Context: + , Application< Dâ &t Ø Datasource [> O DG context † ûm W[3=.</p> <p>¥ Global: GlobalNamingResource† ûm Datasource [> O W[- ' , 8qLr <; Ōž @I J DataSource Link Listm# W[&z ST * =.</p> <p>¥ Global+ResourceLink: GlobalNamingResource † ûm Datasource[> O W[- ' Datasource ōÈ! DG context† ûm W[3=.</p>
JNDI Name(*)	Global DataSourceP JNDIÒ	
Databases	DGI J STg ' <Z / %P [> B W[
Resource Name	DatabasesP <Y	
Address(Host/Port)	DGI J STg Þ<óˆ 1 Ú	
DriverClassName	JDBC Driver €ß%Ò	
URL(*)	JDBC URL	
Username(*)	Ã« STUÒ	
Password(*)	Ã« O%> ,	<p>encryption" HÈg „ • O%> , B | šk &z Tœ* =. > . " NV | šk &! ý" Åœ* =.</p>
Encryption Level	AS [> m ¢* | šk ÊN p[	Default : Password only
DefaultAutoCommit	Poolm# <. 3 Connection6P U` Commit • þ	Default : JDBC driverP Mú]

VW(*! _Ra)	I J	X)
AutoReconnection	TestOnBorrow TestOnWhileIdleP] " W[g Û ST. true/false m Ôs É] t `) &d W[/. User Defined í %² É] " STUO ÿ Ã W[O•	
InitialSize	PoolP ? M Connection e	Default : 10
MaxActive	PoolP é ¢ Connection e	Default : 100
MinIdle	é / Idle Connection e	Default : 10
MaxIdle	é ¢ Idle Connection e	Default : 100
MaxWait	Poolm OT * Connection< ÿ" „ • ¢M&! é ¢² ^ (ms)	Default : 30000
MinEvictableIdleTimeMi llis	Vĩ ² ^ <• idle • þJ Poolm l ÷ * Connectionr Cn ¢• < / (ms)	Default : 60000 (60s) (XaDataSource = trueJ W[&Ø" ² 1800000 (30m))
ValidationQuery	Connection å " . – § " L	Default : null
ValidationInterval	Connection å " . – § Ě M(ms)	Default : 3000
TestOnBorrow	Poolm# † ‡ ; " ©ã M ; m validationQuerym W[3 " L f" ef &z † ‡ ; P å " z Y » A	Default : default
TestOnReturn	Poolm † ‡ ; " Oª &M ; m validationQuerym W[3 " L f" ef &z † ‡ ; P å " z Y » A	Default : default
TestWhileIdle	Idle • þP † ‡ ; m ¢V validationQuerym W[3 " L f" ef &z † ‡ ; P å " z Y » A	Default : default
LogValidationErrors	validation query ef Q 9: ; < ² 9: ~P z Y	Default : default(false)
TimeBetweenEvictionR unsMillis	ST–p q r Connection" Ç~&! Thread >f Ě M(ms)	Default : 5000
RemoveAbandoned	Connection å > – ~ z Y	Default : default
RemoveAbandonedTim eout	å >Connection" < ³ &M N* Timeout] (s)	Default : 60
LogAbandoned	Connection å > Û L² J « z Y	Default : default
AbandonWhenPercenta geFull	Connection pool< W[* ~ å • " ? F V Ý pi abandon" ef 2	Default : 0

VW(*! _Ra)	I J	X)
JdbcInterceptors	å_&' q®¿ O• * AZ¬ZB ST&z STU [P M• " ÇOg e RÐ	QueryTimeout W[² QueryTimeoutIntercept or(queryTimeout=² ^(?)) EP

!

Default] < true | ! falseO Þb default A „ • , JDBC DriverP Mú] < ST 3=.

!

¥ DataSourceB Context ÊNJ W[&Ü +, Application< Dâ * =.

¥ Password | Šk a' L - r AESB ST&' R=. | Šk B N* S] r Manager
LENA Home &N /conf/repository/manager.conf () F] WAS Home &N
/conf/advertiser.conf ã m# 0datasource.key=S] 0I J KL * =.

2. Databases

URL W[² DG" STg [> B DatabasesB i 68 aØ* =.

ef (+) [\ " €O&Ü k òI < <. 3=.

- DatabasesB - &g Resource Name" EP* =.
- U` I J ®>Í DriverClassName " » A* =. Æ„ g () O R" „ • Æ„ * =.
- Address(P<ó \ 1 Ú)B EP* Q Tæ* =.

3. JDBC driver Upload

ManagerB GV JDBC Driver libraryB upload g e R=.

DataSource • Ñ [> &NP Upload [\ " €O&Ü ÞB⁻ . < uploadB N* k Ü< ~P3=.

- SearchÇ⁻ " GV upload g () " í %* =. Upload g () r JDBC Driver library < J JAR
æ| P () i í %g e R=.
- Upload Ç⁻ " €O&Ü í %* () < target s t u L J upload 3=.
- JDBC Driver () < upload– ! „ J ! \${SERVER_HOME}/lib/datasource< =.

4. Connection Test

DataSource • Ñ k Üm# Connection Test [\ " €O&Ü W[3 DataSourceem ¢* __¬ A%ÚB
efg e R=. [• @I J __¬< 3 „ • "JDBC Connection is successfully tested" s! f - O
~P3=.

i Š "Driver Class[€ß%Ò] does not exist." s! 9: f - O ~P^ „ • , Vİ driver classO
[• @I J òJ , –8 RI h <m ¢* classpathO W[–8 R! p » A* =.

classpath! WAS • Ñ > Environment > JVM Settings ã m ÇO* =.

W[,

!

CLASSPATH="\$\{CLASSPATH}: \$\{CATALINA_HOME}/I i b/datasource/oj dbc6.
jar"

4.3.10. Application List

WY

SERVER Application Server WX =. 56 Application# p1g ServerP Application" í %* =. p1O ~ J 3 ApplicationP @Ø" WX&! k Ü" CD* =.

Application @ØP à@r ÞB´ . =.

Table 21. Application List à@

VW	I J	X)
Type	p1g ApplicationP æþ	
Base Name	Base Ò	
Context Path	Context „ J	
DocBase	ApplicationP NX	
Status	Application • þ	ÞB´ . r • þB CD2 ¥ Started(v) ¥ Stop([) ¥ Error(!)
	Action Ç´	ÞB´ . r M• " CD2 ¥ Undeploy(bcd) [\ ¥ Application Start [\ ¥ Application Stop [\ ¥ Application Reload [\
	View Ç´	ÞB´ . r M• " CD2 ¥ web.xml View(Ln) [\

Deploy

Application " p1&M N* «. r ÞB´ . =.

Table 22. Application p1 «.

VW(*! _Ra)	I J	X)
Application Type	p 1 g ApplicationP æp	
Context Path(*)	Context „ J	
unpackWAR	WAR() " i Œ&' ° # >f g ýApP z Y.] < falseA „ • , WAR () P %„ " ° p q' p 1	Default : true
DocBase(*)	ApplicationP NX	Upload op(qr) [\ " GV () " òJ, g e RÐ

Application Upload

ž t P p 1 ² %½< Ÿ! „ • ManagerB GV application" upload g e R=.

!

1. #ç B í %* Q Applications B í %&z Application k ŸI J <` * =.
2. Applications k Ÿ &³ P Application Deploy † Ÿm#, DocBase à@ • 6 wm R!
Upload op(qr) [\ " €O&Ÿ () ² %½ k Ÿ< ~P3=.
3. upload g target s t u L (Server ± Host)B í %* =.
4. Upload [\ " €O&Ÿ application () " í %g e R! k ò< <. 3=.
5. p 1 g application () " í %&' Upload [\ " €O&Ÿ í %* () < target
s t u LJ upload 3=.

Import

Import [\ " €O&z , [Resource] ÁÂm# aØ* Application [> B OQ⁻ p 1 g e R=.

I]] / 1 2

Application @ØWX k Ÿm# Application Name" í %&Ÿ Application W[KLk Ÿ" WXg e R=.

Application Descriptor ⁀ DataSourceem Φ* W[\ KL M• " CD* =.

Application W[Æ„ r í %* Serverm#i O• &=.

Application Settings

Application Descriptorm W[3 [> B KL * =.

stf; (u) [\ " €O&z Application @Øk ŸI J ² P³ e R=. Expand all [\ " €O&z
ContextP ÇO@A «. " W[g e R=.

DocBase⁀ ContextPath! e[g e ŸI h, «. P UÑ* [> ! pB⁀ . =. é? k Ÿm# > <p
q! «. r Expand all [\ " €OV » Ag e R=.

Table 23. Application Setting

VW(*! _Ra)	I J	X)
DocBase(*)	ApplicationP Document Base	
Context Path(*)	Context „ J	

VW(*! _Ra)	I J	X)
unpackWAR	WAR() " i Õ&' ° # >f g ýApP z Y.] < falseA „ • , WAR () P %„ r ° Lp q' , 4 ´ qLr <; r ³ p %„ 3 ®J ÷ pX	Default : true
reloadable	Application Æ„ ² (Class File) ÷ O† z Y	
privileged	Container ServletP ST z Y	
cookies	session identifier G- m cookie ST z Y	
useHttpOnly	client sidem# %È ÙÚB z T&z session IDJ P ÄÄ o³ z Y	
sessionCookieDomain	W[µ" „ • 4 8qLr <; m# W[3 + , t ÄÄ" ¶8. .W[&p q" „ • 4 8qLr <; m PV - &3 domain< ST /	
sessionCookieName	W[&Ü Vİ <YI J + , Ñ; „ SO <. /	Default : JSESSIONID
sessionCookiePath	W[g „ • 4 8qLr <; r Vİ „ JB ST	
useNaming	J2EE q¹ ° " N* JNDI InitialContextB ST &M NV W[	Default : true



Add Attribute [\ " ST&z «.] " ÇOg e R=.

DataSource Link List

Global DataSourceB Applicationm# STg e Rt Ø W[M• " CD* =.

DataSource ÕÈ KLP «. r Þß⁻ . =.

Table 24. DataSource ÕÈ KL «.

VW(*! _Ra)	I J
Name(*)	Applicationm# STg JNDI < Y
JNDI Name(*)	Global DataSourceP JNDI< Y
UserName	DataSource Ä« STU Ò
URL	JDBC URL
Description	DataSourcem Φ* WÒ
+ MNO	New [\ , R] (^_) [\ " €O&z í %3 DataSource[> O Æ„ ¼\ " §²
- MNO	` =(bcd) [\ " €O&z í %3 DataSource [> O NC/ " §²

New [\ " €O&Ü - » W[" ÇOg e R' , Save [\ " €O&Ü Æ„ 3 W[< Tæ3=.



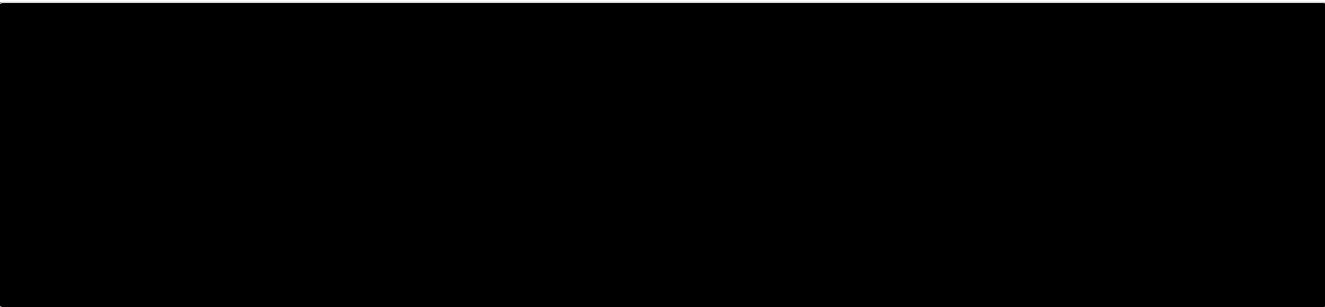
WASm W[3 Datasource ¼ ScopeO Global | ! Global + ResourceLinkJ – 8R!
DatasourceO - » W[² JNDI NameP í %à @I J ° ȡ =.

4.4. Web Server

Web ServerB KL&M N* k Ü" CD* =. Nodem WX* Web ServerP aØ, e[, NCO O• &h,
² • Fª J B e f g e R=.

4.4.1. WY

Web Server ListB G&z] Web ServerB KLg e R=.



Web ServerP « . r ÞB⁻ . =.

Table 25. Web Server « .

VW(*! _Ra)	I J	X)
Status	ServerP • p	ÞB⁻ . r • pB CD2 * Started(v) * Stop([) * Error(!)
Name(*)	ServerP < Y	
Address	ServerP IPĖ /	
Server ID	ServerP ID	
HTTP Port	HTTP 1 Ú8š	
HTTPS Port	HTTPS 1 Ú8š	
SSL	Shell > f ² SSL MOP O%>, ST z Y	Web Serverm SSL K { W[" VÝ2
	ServerP ² • \ª J	
+ MNO	Register [ \ | ! - [ \ " €O&z í %3 Server [> O Æ„ ¼\ " §²	
- MNO	` =(bcd) [\ " €O&z í %3 Server[> O NC/ " §²	
	Action(É) [\ " €O&Ü Forced StopF Forced RestartB e f g e R! ÁÃ CD	

4.4.2. Install

1. **Install** [\ " €O&z ServerP WXB `` \$* =.
2. Server ID` Service PortB EP* =.
3. **Save** [\ " €O&z Tœ* =.

!

Nodem >C WX– 8 R! Server` Managerm# KL&! ServerP [> m! o<O R" e R=. (consoleMO WX ²)

!

Server ID ¼µ 9: O ; <&! „ • , Register M• " <T&z WX3 Server [> B ÇOJ »AVÝ * =.

4.4.3. Clone

1. **Clone** [\ " €O&z Web ServerP µCB `` \$* =.
2. Node ListB í %&z µCg ServerB í %* =.
3. Clone Server ID` Service PortB EP* =.

(Include External Source! =´ ^ , J #çB µC&! „ • STO• &h, µCg #çP Document Root s t uLm R! () t 2Ó µC&! p z YB W[* =.)

4. **Save** [\ " €O&z Tœ* =.

!

Nodem >C WX– 8 R! Server` Managerm# KL&! ServerP [> m! o<O R" e R=. (consoleMO WX ²)

!

Server ID ¼µ 9: O ; <&! „ • , Register M• " <T&z WX3 Server [> B ÇOJ »AVÝ * =.

4.4.4. Register

1. **Register** [\ " €O* =.
2. aØ&Ū! ServerB í %* =.
3. **Save** [\ " €O&z Tœ* =.

4.4.5. R]

1. **R]** (^_) [\ " €O&z Server [> B e[O• * • pJ Æ„ * =.
2. ServerP « . " e[* =.
3. **Save** [\ " €O&z Tœ* =.

4.4.6. ` =

1. ` =(bcd) [\ " €O&z Server[> B NC O• * • pJ Æ„ * =.
2. **Save** [\ " €O* =.
3. **OK** [\ " ` vÜ NC åæ" í %&! I < ~P3=.

è Unregister : Manager DBm#i VÍ Server [> B NC&’ ôL@A Server engine å p (ÇQ Register [\ " GV =² aØ O•)

è Uninstall : Manager DBm# VÍ Server [> B NC&' ôL@A Server engine t NC

4. Uninstall í %² , J ç s t u L NCz YB v! I < ~ P3=.

!

Server Clusterm ±z R! #ç! NCg e Ÿ=.

!

ADMIN > Preference > Manager Environment ÁÂP Manager Configuration
† Ūm# use Server Delete Protection] " trueJ W[&! „ • Managerm# #ç O
uninstall–! ý" ñp g e R=.

4.4.7. Start/Stop

Single Start/Stop

1. Stop [\ " €O&z ServerB ^a J * =.

2. Start [\ " €O&z ServerB ² • * =.

"

ServerB ¼p² General x P Stop Mode m Ôs ^a J ñ | < * s Í =.

Stop : Mú ^a J • ; I J —÷ # \$ %¼A • ò" > æ&p q! =.

Graceful Stop : —÷ # \$ %¼A • ò" ~ J * Q ^a J * =. (Window m#! # \$ %
> æ&p qĐ)

!

² • O • * • p) „ • mi Start [\ < z . k 3=.

Multi Server Start/Stop

1. ² • { r ^a J &' U &! µeÕP ServerB í %* =.

2. Server @Ø &³ P Multi Action [\ " €O* =.

3. k òI m# Action Type" í % Q Action [\ " €O&z µeÕP Serverm Φ* ² • { r ^a J
• ò" ef * =.

Forced Stop/Restart

1. Server @Ø Oœ • 6P É [\ " €O* =.

2. - C ^a J { r - C ÷² • " ef * =.

4.4.8. I]] / 1 2

Web ServerP W[[> B Æ„ &! M• " CD* =. Web Server @Øm# ServerB í %&Ü W[
[> B KL&! k ÜI J <` * =.

General

Web ServerP) O@A W[] F Connection, Process [> B Æ%g e R=.

Web ServerP W[[> ! Tœ² W[() m Φ* Validation" ef &d – 8 RI h, W[() 9: J
A* Server M` œ´ O ; <" é/k&' R=.

!

W[() 9: ² () < Tœ–p q’ 9: Á² pO ~P3=

9: Á² p ,

AH00526: Syntax error on line 253 É Argument for 'Require all' must be 'granted' or 'denied'

W[[> P • Ñ ãTr =ÐF . =.

1. Server Info (env.shF /conf/httpd.conf () KL)

Table 26. Server Info

VW(*! _Ra)	I J	X)
HTTP Port(*)	HTTP Port	
HTTPS Port(*)	HTTPS Port	
Staging HTTP Port	Staging +, J M` ² ST&! # \$ % 1 Ú	Graceful restart ² m <T / LENA! MÚ nostage +,
Staging HTTPS Port	Staging +, J M` ² ST&! HTTPS 1 Ú	Graceful restart ² m <T / LENA! MÚ nostage +,
Install Path	Server WX „ J	
Document Root(*)	Web Serverm# CD&! f # 6< Tœ– 8 R! MÚ • } „ J	
Welcome Page	4S<ÚP ?M4<p f #J 8¼ () " STg ýAp [P	
Stop Mode	WEB #Çª J² äW&! • ;	Stop : MÚª J • ; I J —÷ # \$ %¼A • ò" > œ&p q! =. Graceful Stop : —÷ # \$ %¼A • ò" ~ J * Qª J * =. (Window m#! # \$ % > œ&p qÐ)
Directory/Path	8¼ # \$ %´ M• " ' T/nY gpB W[g 4 f # 6< R! stuL „ J	

VW(*! _Ra)	I J	X)
Directory/Options	p[* st uL <&P +, () F st uL6m @Tg ÃÄ C8 W[	Indexes : welcome pageB ½" e Ÿ" ù, Document Root &NP () @Ø" > z Ě! ý" ñp FollowSymLinks : Document Root &Nm MI P 4f # <\$P () ² %½m ¾yOöĚJ ÃÄ &! ý" ñp
Directory /AllowOverride	Document Root &N st uL ž L/% ÃÄ C8 W[() () O@I J AccessFileName : .htaccess)m ¢&z 8¼ p² U ST" ' Og ýAp W[	=ÐF . r åæ< I ÷ 2 * None : 8' * p² Ut ' T&p qÐ * All : +, p² U STO• * AuthConfig : STU A§ p² U ' T * FileInfo : f # åæ C8 p² U ' T * Indexes : st uL Indexing C8 p² U ' T * Limit : š %Ú ÃÄ C8 p² U ' T
Directory/Require	A§ 3 STUO ' O3 Action" ef &! p – §	

2. Connection Info (/conf/extra/httpd-default.conf () KL)

Table 27. Connection Info

VW(*! _Ra)	I J	X)
Timeout(*)	€s < ĵ Úˉ Server^m _¬ Q) [² ^ ` . p• <CÚO ; <&p qÄ" ù ServerO M=L=O _¬" Ä" ² ^ (s)	Default : 60
KeepAlive(*)	K[* „ J Ñ%O K[STUP) + • ò" I « V# üLgp z Y	Default : On
MaxKeepAliveRequests (*)	KeepAliveO On) ù å" *] I J &° P „ J Ñ%O K[STUP) + " p[* Äei Ä üL <] " Ä8#Ü Vĭ „ J Ñ%! Ä' = ´ „ J Ñ%O) + " üL2	Default : 100

VW(*! _Ra)	I J	X)
KeepAliveTimeout(*)	KeepAliveO On) ù å" *] I J W[* ² ^ ` .) + < ÝI Ü _¬" ÁM NV Ž\p3 ² Æ(s)	Default : 5
RequestReadTimeout(*)	STUJYZ request header¬ bodyB , M NV M=L! ² ^ W[3 ² ^ . m , p Ç&Ü 408 REQUEST TIME OUT m®B > Ě	Default : header=20-40,MinRate=500 body=20,MinRate=500

3. Process Info (/conf/extra/httpd-mpm.conf () KL)

Table 28. Process Info

VW(*! _Ra)	I J	X)
StartServers(*)	Web Server M` ² ? Mk -! Server „ J Ñ% e	Default : 2
ServerLimit(*)	MaxClientsO < . g e R! éÇ „ J Ñ%]	Default : 8
ThreadLimit(*)	ThreadsPerChildP W[O• * éÇ]	Default : 128
MinSpareThreads(*)	Idle • pm# Idle Thread ŒeO <] > = @" ù ThreadO <] Ép Ê8° åp	Default : 128
MaxSpareThreads(*)	Idle • pm# Idle Thread ŒeO <] > = Ě" ù ThreadO <] Ép æ868 åp	Default : 256
ThreadsPerChild(*)	] ] P U| „ J Ñ%O < . &! Thread e	Default : 128
MaxRequestWorkers(*)	j H U| „ J Ñ%O < . g e R! éÇ Thread e	Default : 1024
MaxConnectionPerChild(*)	U| „ J Ñ%O # \$ % g e R! éÇ) + e . <] i Ě) + " üL * Qª J * =.	Default : 0 (0: C* ÝĐ)

4. Pagespeed Info

Table 29. Pagespeed Info

VW(*! _Ra)	I J	X)
Enabled(*)	mod_pagespeedB @T&z Web ServerO CD&! Resourcem Φ* é@k B ef &z S<Ú « t B Ì) p z Y	Default : off =DF . r • ; " CD2 ¥ on : Resource6m ΦV é@k ' T ¥ off : ÇO@A é@k B ¼p&°, MI m é@k – 8R! Resource6m Φ* ÄÄ ' T ¥ unplugged : é@k ¼p \ ÄÄ ' ,
RewriteLevel(*)	+ 1 < rewriteg (Z P Level W[	Default : default(CoreFilters) =DF . r • ; " CD2 ¥ CoreFilters : S j m ΦY&P 4S<Úm# · j &=' <] &! (ZO 1 2– 8RÐ ¥ OptimizeForBandwi dth : · j . " – k &h, PagespeedB A| &p Ç&! S<Úm# ST&M @H ¥ PassThrough : (ZB i Y e` I J EP
FileCachePath(*)	Caching ^ File6< Tœ– ! s t u L P „ J	
LogDirPath(*)	LogB MØg s t u L P „ J	
EnableFilters	STg (Z 6P @Ø	
DisableFilters	ST&p q" (Z 6P @Ø	

VW(*! _Ra)	I J	X)
Allow URI	rewriteB ' Tg Resource6P -), í , (*)B 1 2* URI	,) /js
Disallow URI	rewriteB ' T&p q" -), í , (*)B 1 2* URI	



W[" Æ„ g „ • e[3 Sà P O†" N&z ServerP ÷M` < () &=.

Connector

Web ServerP Connector[> - Load Balancer[> B Æ%g e R=. Connector Info † û P [> ! Web Server ã m W[3 Load BalancerP Mú W[] " , Load Balancer† û r Web Server- WASB _I &! [> B K L * =.

W[[> P • Ñ ã Tr = Æ F . =.

1. Connector Info (/conf/extra/httpd-jk.conf- /conf/extra/workers.properties () K L)

Table 30. Connector Info

VW(*! _Ra)	I J	X)
Type(*)	Web Server- WASO G- g ù ST&! „ J u...	ajp 13
Load Balancing Factor(*)	WASP Y& &€ pe. V, • òÎ gİ \$•	Default : 1
Socket Timeout(*)	JK- WAS ^m ê™ ¢M² ^ (TCP socket ã Y@A • þm ¢* timeout" P5, s)	Default : 300
Socket Connect Timeout(*)	JK- WAS ^P socket __ ñ ¢M² ^	Default : 5000
Socket Keepalive(*)	Web Server- WAS ^m ñk™ < R! „ • inactive • þA connectionr ç L d – 8 R! ' OSm keep alive Á² pB > ã# ñk™ < inactive connection" Ĩ sç L! ý" • " p z Y W[	Default : true
Connect Timeout(*)	JK- WAS ^m __ ñ < ~ J 3 Q, ajp13 „ J u...m# P cping requestm ¢* cpong respond ¢M² ^ (ms)	Default : 10000
Connection Pool Size(*)	JK- WAS ^m † ‡; " cache&! È M	Default : 128
Connection Pool Min Size(*)	JK- WAS ^m † ‡; " cache&! é / È M	Default : 32
Connection Pool Timeout(*)	Connection poolm#socket" close &MÉ p open3 socket" å p&!² ^	WASm# connectionTimeout W[F . < W[VÝ 2
Log Level(*)	m® J ¿ () P MØ ã T" â B° UÑÐ MØgp p[	Default : error

VW(*! _Ra)	I J	X)
Log Format(*)	J ȷ () m 8¼ 1 ÑI J J ȷ B Ò^ p W[
Status(*)	Server • þ +î Z õ W[] ÓÔ z Y Enable í %² Status UriF Allow IPB W[g e RÐ	Default : Enable
Status Url(*)	Server • þ +î Z õ URL	Default : /jk-status/
Status Allow IP(*)	Server • þ +î Z õ URLm ÃÄ Ö• * IP	Default : 127.0.0.1

2. Load Balancer Info

(/conf/extra/workers.properties, /conf/extra/uriworkermap/uriworkermap_\ {Virtual Host ID}.properties, /conf/extra/vhost/\ {Virtual Host ID}.conf () K L)

Table 31. Load Balancer Info

VW(*! _Ra)	I J	X)
LB ID(*)	Load BalancerÒ	
Sticky Session	Session IDB MOI J s • Ô" p" gp z Y	Default : true
Status Enabled	Server • þ +î Z õ ST z Y `) Virtual Hostm @T3 Load Balancerm ΦV#!) Ò @T/	Default : N
Virtual Host ID(*)	Load BalancerB @Tg Virtual Host ID	Virtual Host x" GV KL/
Session Cookie	Session Cookie Name" Æ„ &' U g „ • W[(WASm# Session Cookie Name Æ„ ² . < Æ„ VÖÝ 2)	Default: JSESSIONID
URI Patterns(*)	Web serverJ 68α) +6m ΦV URIO×" – S&z WASJ i * &! uri mapping" [P	

VW(*! _Ra)	I J	X)
Method(*)	Load Balancer O Y&B &€&M @¤* workerB < ž &! ' STg Á#,	=ÐF . r ŽE" CD2 ¥ R[request] :) +eO Oœ @r worker í %. (Default) ¥ S[ession] : _¬3 Ñ; < Oœ @r worker í % ¥ N[ext] : S[ession]F \$Ø&pi } @r eP session" &€VÝ &! „ • í % ¥ T[raffic]Ê: JK ⁻ AJP† ‡ Z S<m _Ú>È ÚßÙ< Oœ • r worker í % ¥ B[usyness] :) + eB MOI J Oœ Y&O @r worker í %f
Redirect	Vİ workerO error • p) ù , r) + " ¢- ÜLg failover workerB W[	Default : Round Robin
LB Factor	• òÎ gİ \$• . Vİ workerO â B° Ęr) " gp [P (5J W[g „ • 1J W[* =´ worker> = 5p } Ęr requestB , Ð)	

URI Pattern [> ! /conf/extra/uriworkermap/uriworkermap_{Virtual Host ID}.properties () m K L 3=.

WAS ListP [+] ¢⁻ " GV Load Balancer⁻ _I –! WASB ÇOg e RI h, ÇO3 WASP Ú ¢⁻ " GV Vİ WASB C\$g e R=.

_I WAS [> ! /conf/extra/workers.properties () m K L 3=.

! W[" Æ„ g „ • e[3 Sà P O† " N&z ServerP ÷M[`] < () &=

Virtual Host

Web ServerP Virtual Host [> B aØ/e [/NCg e R=.

New [\, Delete [\ " GV Virtual HostB aØ/NCg e R=.

1Ö <• P Load BalancerB @T* Virtual Host! NCg e Ý=. i Š Vİ Virtual HostB NC&ÜÜ,
ÜT Connector x" GV Load BalancerP Virtual Host IDB =´ Virtual Host IDJ Æ„ VÝ * =.

SSL Enabled Rewrite Enabled B H È * „ • Þ ß - . < • Ñ à @ † û < Ç O J ~ P 3 = .

W [[> P • Ñ ã T r = Ð F . = .

(/conf/extra/vhost/\{Virtual Host ID}.conf, /conf/extra/rewrite/rewrite_\{Virtual Host ID}.conf,
/conf/extra/ssl/ssl_\{Virtual Host ID}.conf () K L)

Table 32. Virtual Host W [[>

VW(*! _Ra)	I J	X)
Virtual Host ID(*)	Virtual Host < Y	
Port(*)	V ĭ O • š %Ú O S T &! HTTP Port	
DocumentRoot(*)	V ĭ O • š %Ú P Ž 4 < p s t u L N X	ServerP DocumentRoot Æ e A \${DOC_ROOT}B z T & z `) & d { r , ¿ & N J p [O •
ServerName(*)	V ĭ O • š %Ú P † Á A Ò	
ServerAlias	V ĭ O • š %Ú O S T &! ServerAlias	-) , Í , f U 1 2 O • (*.example.com)
ErrorLog(*)	V ĭ O • š %Ú P 4 m ® J ¿ () N X	
CustomLog(*)	V ĭ O • š %Ú P 4 J ¿ () N X	
Directory/Path	DocumentRoot m # p [* „ J	
Directory/Options	p [* s t u L < & P + , () F s t u L 6 m @ T g Ä Ä C 8 W [	-Indexes! welcome page B ½ " e Ÿ " ù , Document Root & N P () @ Ø " > z È ! ý " ñ p -FollowSymLinks! Document Root & N m M I P 4 f # < \$ P () ² % ½ m ¾ y O õ È J Ä Ä & ! ý " ñ p

VW(*! _Ra)	I J	X)
Directory/AllowOverride	Document Root &N s t u L ž L / % ÃÄ C8 W[() () O@I J AccessFileName : .htaccess)m ¢&z 8¼ p² U ST" ' Og ýAp W[	=ÐF . r åæ" CD2 ¥ None : 8' * p² Ut ' T&p qÐ ¥ All : +, p² U STO• ¥ AuthConfig : ST U A§ p² U' T ¥ FileInfo : f # åæ C8 p² U' T ¥ Indexes : s t u L Indexing C8 p² U' T ¥ Limit : š %Ú ÃÄ C8 p² U' T
Directory/Require	A§ 3 ST U O ' O3 Action" ef &! p – §	
Rewrite Enabled	RewriteST z Y	
Rewrite Conf	RewriteK{ • Ñ W[. p[* Rewrite Conditionm Ôs Rewrite Rulem W[* rule¢J rewrite2	
Proxy Enabled	Proxy ST z Y	conf/extra/proxy s t u L m W[() < NX* =. () * „ • ProxyPreserveHost B Óò&Ü) +P host Ò" åpg e R=. default] r off <h () * „ • on * =. (ex: application m# redirect ST ²)
Proxy Pass Match	backend` _` &M N* [ » | O×F Target # \$ % t ÁÄË /	
DNS Lookup Interval	DNS Lookup Ë M(s)	Default: 10
SSL Enabled	SSL ST z Y	
SSLPort(*)	HTTPS Port	

VW(*! _Ra)	I J	X)
SSLCertificateFile(*)	SSL A § # , J	
SSLCertificateKeyFile(*)	SSL A § # Key() , J	
SSLCertificateChainFile	File of PEM-encoded Server CA Certificate	
SSLCACertificateFile	ROOT A § # , J	
Https Redirect Enabled	HttpÜHttps Redirect ST z Y	
SSL Log Separation	SSL Log W[&L ST z Y	
SSLErrorLog	SSL Error Log W[
SSLCustomLog	SSL Custom Log W[

! W[" Æ„ g „ • e[3 Sà P O† " N&z ServerP ÷M` < () &=

Logging

Web ServerP J ¿ W[[> B Æ%g e R=.

W[[> P • Ñ ãTr =ÐF . =.

1. Log Home

Table 33. Log Home

VW(*! _Ra)	I J	X)
Log Home(*)	Log Home , J	default í %² #çWXst uL &N logs • } J W[, custom í %² Log Home Prefixà@m# J¿st uL Ž „ J EPO•
Retention Days(*)	J¿ éΦ > K) e	Default : 0(• C*)

2. Error Log

Web serverO Í ³ [> ^ requestB üL&! t¼m ; <* 9: B MØg ù ST3=. ServerO
² • &n° ` • &! ' f CO ; <² z Mm W[3 NXP () " ÛT » A* =.

Table 34. Error Log

VW(*! _Ra)	I J	X)
Location(*)	Web serverP m®J¿ () NXB p[

VW(*! _Ra)	I J	X)
Log Level(*)	m®J ¿ () P MØãT" âB° UÑ&d MØg p p[

3. Custom Log

J ¿ () <YF æ| " W[* =. f„ ÆeB ST&z requestP KÝm Ôs í %@I J J ¿ B Ò^ e
R=.

Table 35. Custom Log

VW(*! _Ra)	I J	X)
Location(File|Pipe)(*)	File: m®J ¿ () NX Pipe: (<„ fU "|" Æm J ¿ [> B §¨ EPI J , " „ J ¿ P „ J	
Format|Nickname(*)	J ¿ () m MØg ãT Log FormatI J [P* nickname" ßn° ÝÃ J ¿ 1Ñ" • .	
Env	ServerP f„ Æe å• m Ôs J ¿ B MØgp zY • .	



, B 68, †8Å STUP) +F \$†8Å STUP) +" =´ J ¿ () m MØ&'
¢r „ • =ÐF . < W[g e R=.

W[,

Location Format Env

logs/english_log common english

logs/non_english_log common !english

4. Log Format

J ¿ () m STg æ| " W[* =.

Table 36. Log Format

VW(*! _Ra)	I J	X)
Format(*)	J ¿ () m 8¼ 1ÑI J J ¿ B Ò^ p W[
Nickname(*)	CustomLogm# STg J ¿ 1Ñ Ò	

5. Log Format with logio

Table 37. Log Format with logio

VW(*! _Ra)	I J	X)
Format(*)	J ĺ () m 8¼ 1ÑI J J ĺ B Ò^ p W[	%l~ %0 ÆeB STV request~ headB 12&z > ā' , ! byte 6[< O•
Nickname(*)	CustomLogm# ST g J ĺ 1Ñ Ò	combinedio! mod_logio_module< J , - 8 R8Ý 2

6. Env

RequestP Wà m Ôs f„ ÆeB W[g ù ST * =.

Table 38. Env

VW(*! _Ra)	I J	X)
Attribute(*)	HTTP) + á } (ex: Host, User-Agent, Referer, Accept-Language),) + « . ¼ &° (Remote_Host, Remote_Addr, Server_Addr, Request_Method, Request_Protocol, Request_RUI) | ! ) + F _K 3 f„ Æe < Y	
Regex(*)	Perl Š f [ » |	
Env-variable[=value](*)	W[g Æe ÒF W[] (optional) Varname, !varname | ! varname=value	
Case	Env-variablem ¢/ f U - &gp z Y	With case : ¢/ f U - & No case : ¢e f U - &ÝÐ

! W[" Æ„ g „ • e[3 Sà P O†" N&z ServerP ÷ M` < () &=

Environment

JVM • ; , Start ShellP W[a" KL&! k Ü" CD* =. () ms ZB GV e[* Q Save [\ " €O&z Tœ* =.

¥ Custom Settings (\$CATALINA_HOME/bin/customenv.sh): ST U † %Ž f„ Æe W[

¥ Start Shell (\$CATALINA_HOME/env.sh) - Server ² • " N* Shell Script

!

Mú@I J W[" e[g e Ýt Ø - 8 R=. e[&' ¢r „ • ADMIN > Manager
Environment > Manager Configuration à@m# I] [\ " €OV Þß W[" false
J Æ„ * =.

```
server.environment.envshell.readonly=false
```

Config Tree

Web ServerP \${SERVER_HOME}/conf s t u L &N W[() 6" () Ĳ%MB GV KL g e R=.

!

Node AgentB >f &! STUO Web Server W[[> () P ÃÄ Å* < R8Ý
e[< O• &=. ÃÄ Å* < Ý" „ • () Write Å* < Ý8 Ĳ% g e Ý=!
Á² pO ~P 3=.

History

W[[> P ~ò \ μ" M• " CD* =. W[[> B e[&z Tœ&Ü HistoryB KL * =. e[) ² B
EP&z –£* =.

/; (k /;) [\ " €O&z í %* () P [> B y e RI h, Restore [\ " €O&z Vİ
W[() J μ" g e R=.

Chapter 5. Resource

5.1. Database

5.6 ÅÂm# DatabaseB í %&Ü Database Resource @Ø< WX3=.

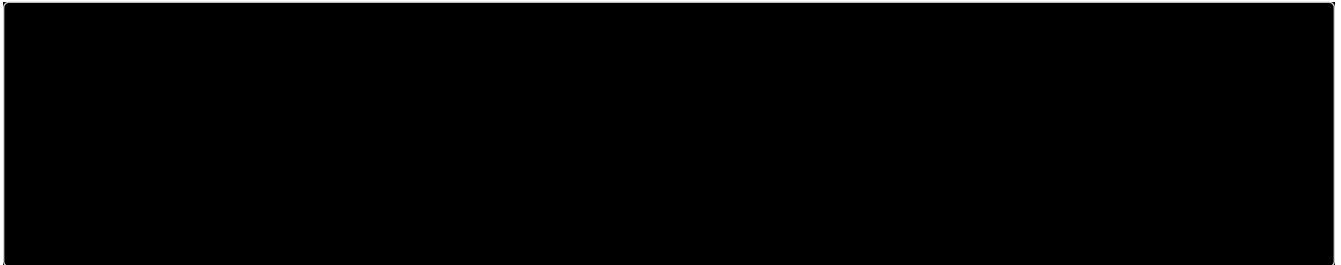


Figure 7. Database @Ø WX k Ü

5.1.1. Database Z Y

1. Database Resource @Øm# New [\ " €O&Ü - » aØ k Ü< ~P3=.
2. EP à@" EP* =.
 è Resource Name" EP* =.
 è DriverClassName" » A Q " &! C} P , s<ÇB í %* =.
 è Address(host/Port) [> B EP* =.
3. Save [\ " €OV Tœ* =.

5.1.2. Database R]

1. Database Resource @Øm# e [&Ü! Database ResourceP HÈ â %B í %* =.
2. Database ResourceP à@" e [* Q Tœ* =.

!

ãT< e [^ „ • Vİ Database Resourcem __→3 DataSoruce Resource\ WASP
 W[m i (– J , Vİ Database Resource &Nm __→3 DataSoruce ResourceO
 I ÷g „ • EPI < MÚ@I J Disable 3=. Edit [\ " €O&Ü e [g e R=.

5.2. DataSource

5.6 ÅÂm# DataSourceB í %&Ü DataSource Resource @Ø< WX3=.

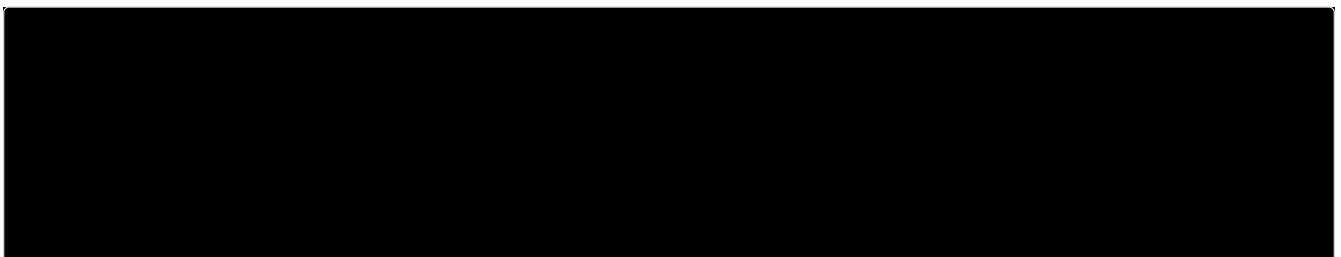


Figure 8. DataSource @Ø WX k Ü

5.2.1. DataSource Z Y

1. DataSource Resource @Øm# New [\ " €O&Ü - » aØ k Ü< ~P3=.
2. Resource Name (, m L L @A <Y" E P* =.
3. DataSourceP • Ñ W[" * =(<Server DataSource W[>>P • Ñ à @ WÒ ä ')
4. Upload [\ " €O&z VÍ DataSourceP DriverB Manager#ç m a Ø* =. 5L a Ø3 Driver! ...† UO Serverm Import&! ² ~ m VÍ ServerJ i ÿ 3=.
5. Save [\ ç ~ " €O&z Tœ* =.

!

Managerm òJ , 3 JDBC Driver! , ...† UO Serverm VÍ DataSource ResourceB Import&! ² ~ m VÍ ServerJ i ÿ 3=. i ÿ 3 JDBC Driver! {#ç Ž „ J }/lib/datasource s t u L m NX&h Classpathm U` I J a Ø3=.

5.2.2. DataSource R]

1. DataSource Resource @Øm# e[&' U &! f" í %&Ü DataSource Resource e[k Ü< §² 3=.
2. Æ„ &' U &! W[" Æ„ * =.
3. Save [\ " €O&z Tœ* =.

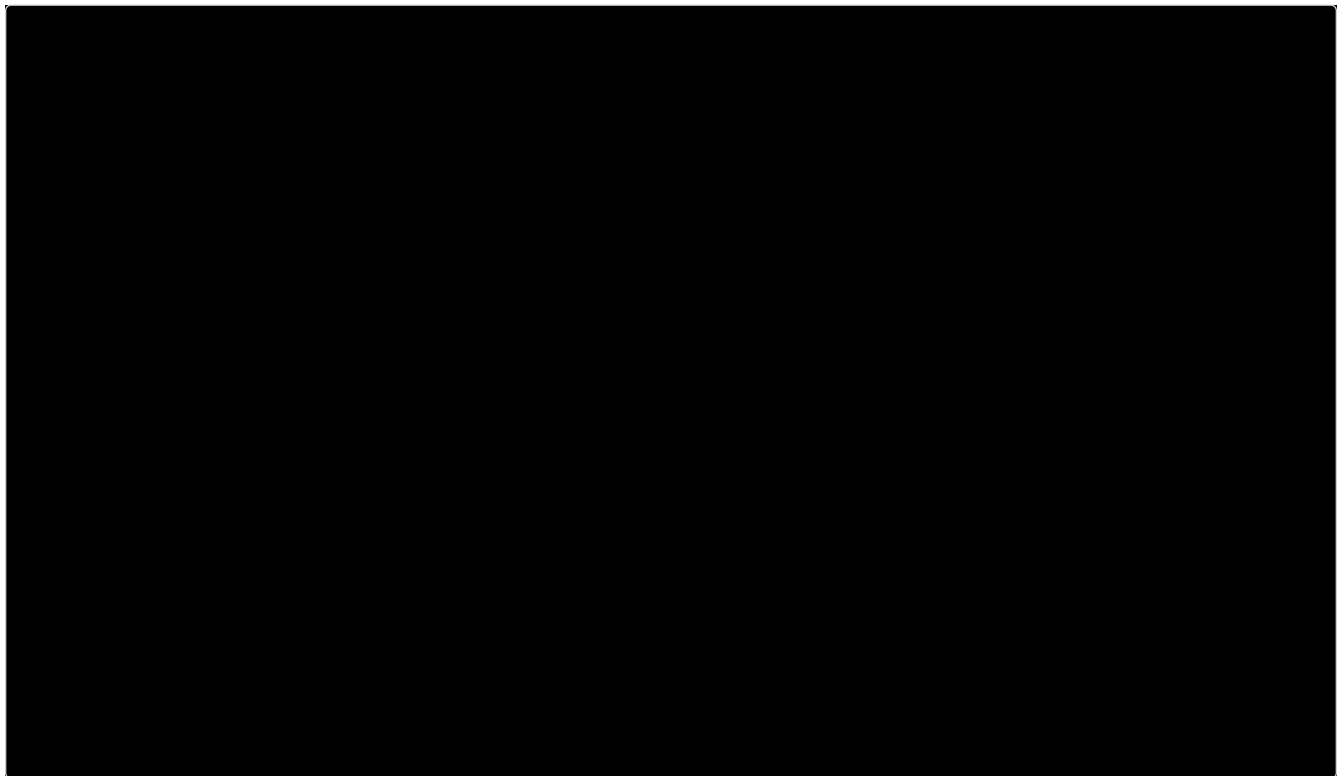


Figure 9. DataSource • Ñ [> k Ü

!

DataSource Resource [> B e[* Q Tœ&Ü VÍ DataSource ResourceO ST– ! Serverm Æ„ 3 W[< i (3=. W[< i (3 ServerB ÷M` &Ü VÍ W[< @T 3=.

||

Classpath a Ø Q DataSource Resource NC ² , Classpath! NC– p qÐm å PVÝ * =.

5.2.3. DataSource ` =

1. DataSource Resource @Øm# NCg DataSource ResourceP HÈ â %B í %* =.
2. Delete [\ " €O&z NC* =.



Server | ! Applicationm# Import&z Registered Server | ! Registered Application< | ÷ &! „ • , VÍ DataSource Resource! NCg e Ý =.

5.2.4. JDBC Driver Upload

1. DataSource Resource aØ { r e[k Üm# Upload [\ " €O&Ü Driver File" Upload g e R! k Ü< ~P3=.
2. qrop [\ " €O&z Local PCm# upload &' U &! Driver File" í %* =.
3. Upload [\ " €O&z ManagerJ Driver File" Upload* =.

5.2.5. DataSource Import

< . * DataSource ResourceB ImportV# ST &' R! Server @Ø(ScopeO Context, Global, Global + LinkA „ •) | ! Application@Ø(ScopeO ApplicationA „ •)r DataSource Resource • Ñ WX ² &³ † ùm §² 3=.

DataSource v w : x y n DataSource Import z ;

ScopeO Context, Global, Global + LinkA DataSource Resource! U- " Import&! ServerB aØg e R=.

1. DataSource KL k Üm# K[DataSource ResourceB í %&z • Ñ [> k ÜI J <` * =.
2. Edit Server List [\ " €O&Ü ServerB aØ KL g e R! I < ~P3=.
3. VÍ DataSourceB Import g ServerB p[V • 6 † ùI J <` ² ã =.
4. Save [\ " €O&Ü VÍ Serverm DataSource ResourceO Import 3=.



Import3 DataSource ResourceB Serverm# NC&ÜÜ, ¢• ServerB 56 † ùI J <` ² ã Q Save [\ " €O* =.

C9 Servery n DataSource Import z ;

1. LENA Manager • ³ P Servers ÁÂB í %* =.
2. 56m# Œ Web Application Server > Resources > DataSource x" €O&Ü, VÍ ServerP DataSource Resource @Ø WX \ DataSource Resource ÇOB g e R! k Ü< ~P3=.
3. Import [\ " €O&Ü k ò I m 5L [P3 DataSource Resource @Ø< WX3=.
4. Import &' U &! DataSource ResourceB í %* =.
5. OK [\ " €O&z VÍ DataSource ResourceB Import * =.



DataSource ResourceB Import &d – Ü VÍ DataSource Resource Server ^P _¬ [> O ãY@I J < . 3= . < _¬ [> B MOI J DataSource Resource e [² ~ m W[Æ„ Sà< VÍ Serverm i * 3= . _¬ [> ! Resource > DataSource k Üm# WXg e R=.

!

Import* DataSource Resource W[r Server W[m# æ%g e ÿ=(W[[> ! y
 e Rpi e[O) W[" æ„ &' U * =Ü Resource > DataSource k ÜI J
 <` &z æ„ * =.

5.3. Application

56 ÅÂm# ApplicationB í %&Ü Application Resource @Ø< WX3=.

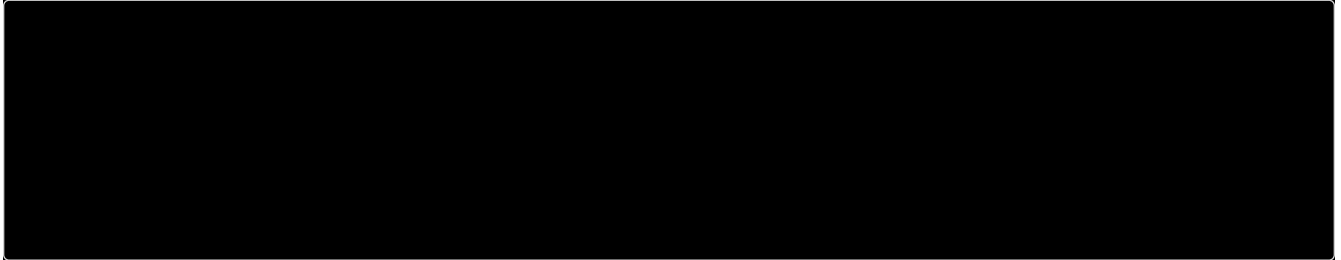


Figure 10. Application @Ø WX k Ü

5.3.1. Application Z Y

1. Application @Øm# **New** [\ " €O&Ü - » aØ k Ü< ~P3=.
2. W[&' U &!] " EP* =.
 è Application Type< WAR) „ • m! ÇOJ W[g e R! à@< §² 3=.(• Ñ W[] r
[Application Settings](#) ä')
3. **Save** [\ " €O&z Tæ* =.

5.3.2. Application R]

1. Application Resource @Øm# e [&' U &! f " í %&Ü e [k Ü< §² 3=.
2. æ„ &' U W[" EP* =.
3. **Save** [\ " €O&z Tæ* =.

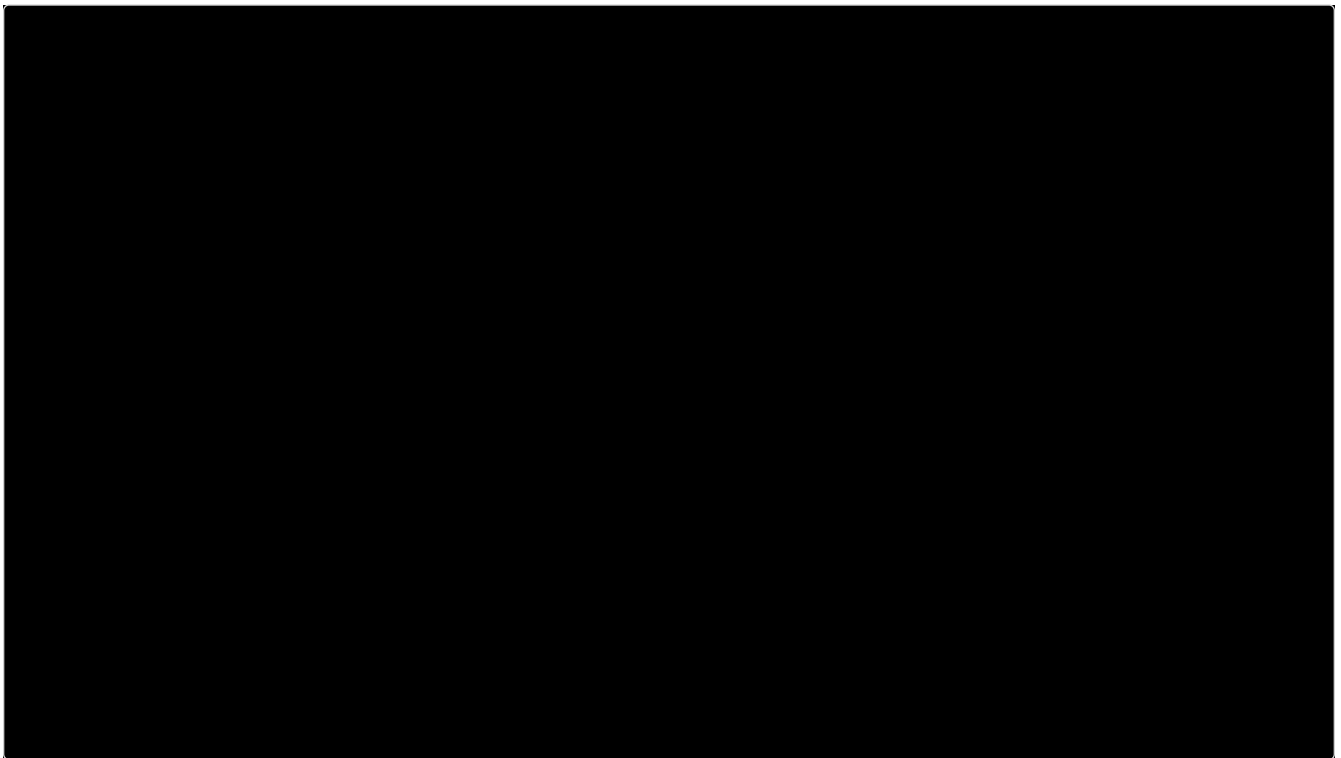


Figure 11. Application • Ñ [> k Ü

!

Application Resource [> B e [* Q Tœ&d –Ü Vİ ResourceO ST–!
 Serverm Æ„ 3 W[< j (3=. W[< j (3 Server! ÷M` &d –Ü Vİ W[<
 @T 3=.

5.3.3. Application ` =

1. Application @Øm# NCg Application ResourceP HÈ â %B í %* =.
2. Delete [\ " €O&z NC* =.

!

Serverm# import&z Registered ServerO I ÷ &! „ • Vİ Application
 ResourceB NCg e ÿ=.

5.3.4. Application Upload

1. Application Resource aØ { r e [k Üm# Upload [\ " €O&Ü Application File" Upload g
 e R! k Ü< ~P3=.
2. qrop [\ " €O&z Local PCm# upload &' U &! Application File" í %* =.
3. Upload [\ " €O&z ManagerJ Application File" Upload* =.

Application Import

< . * Application ResourceB ImportV# ST &' R! Server @Ør , Application Resource • Ñ WX
 &³ † Üm §² 3=.

Application v w : x y n Application Import z ;

Application • Ñ k Üm# U- " ImportV# ST &' R! Server @Ø" e [g e R=.

1. Application KL k Üm# K[Application ResourceB í %&z • Ñ [> k ÜI J < ` * =.

2. **Edit Server List** [\ " €O&Ü ServerB aØ KLg e R! I < ~P3=.
3. Vİ ApplicationB Import g ServerB p[V • 6 † ûI J <` ² ã=.
4. **Save** [\ " €O&Ü Vİ Serverm Application ResourceO Import 3=.



Import3 Application ResourceB Serverm# NC&ÜÜ, ¢• ServerB 56 † ûI J
<` ² ã Q **Save** [\ " €O* =.

C9 Servery n Application Import z ;

1. LENA Manager • ³ P Servers ÁÂB í %* =.
2. 56m# ŒŽ Web Application Server > Applications ÁÂB €O&Ü, Vİ ServerP Application Resource @Ø WX \ Application Resource ÇOB g e R! k Ü< ~P3=.
3. **Import** [\ " €O&Ü k ò I m 5L [P3 Application Resource @Ø< WX3=.
4. Import &' U &! Application ResourceB í %* =.
5. **OK** [\ " €O&z Vİ Application ResourceB Import * =.



Application ResourceB Import &d –Ü Vİ Application Resource Server^P
_¬[> O ãY@I J <. 3=. < _¬ [> B MOI J Application Resource e [² ~ m W[Æ„ Sà< Vİ Serverm j * 3=. _¬ [> ! Resource > Application k Üm# WXg e R=.



Import* Application Resource W[r Server W[m# Æ%g e Ÿ=(W[[> ! y e Rpi e[O) W[" Æ„ &' U * =Ü Resource > Application k ÜI J <` &z Æ„ * =.

Chapter 6. Diagnostics

6.1. Monitoring Dashboard

6.1.1. { | @}

Monitoring Dashboard k Ür &³ m 3ÖP x" CD&' R' í %3 xm Ôs •³ m CD–!) Š[> O Æ„ 3=.

x ž J CD–! [> ! =ĐF . =.

Node ~

a Ø3 Nodež Server +î Z õ [> CD

] [> P WX ĚMB W[g e RI h, WASP „ • Function i j m R! • € [\ " €O&Ü • Ñ +î Z õ k ÜI J <` g e R=.

Monitoring Dashboard k Ür =ĐF . =.

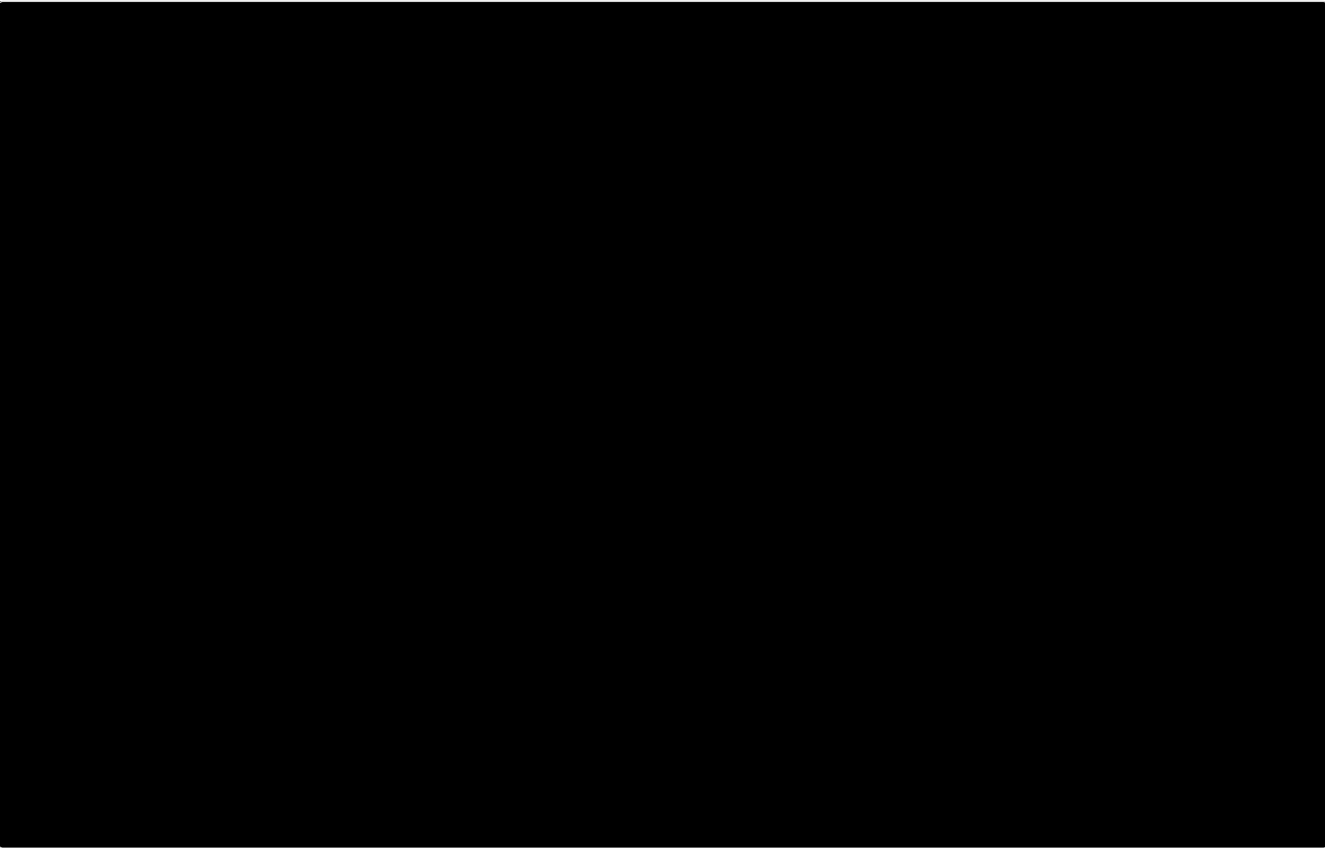


Figure 12. Monitoring DashboardP Node x k Ü

Monitoring Dashboard k Üm# ST3 «. 6r Þβ⁻ . =. STG æþJ CD&! [> P £• r Status Range «. " <TV Æ„ g e R=.(< æP &N æA +î Z õ Mú W[ä')

Table 39. Node • þ

VW	I J	X)
CPU	NodePCPU ST G	Default W[] r 60% 5i) „ • Low, 80% <•) „ • High<=.

VW	I J	X)
Memory	NodeP Memory ST G	Default W[] r 60% 5i) „ • Low, 80% < •) „ • High< =.
Disk	NodeP Disk ST G	Engine< WX3 Disk ST GJ Œ Default W[] r 60% 5i) „ • Low, 80% < •) „ • High< =.

Table 40. Application Server • p

VW	I J	X)
Status	Server M` z Y, Í ³ ¬F; f z Y(? • 8 MNO) \\ U` ¢êef z Y(G, MNO)	Unknown • p! Node AgentB GV #ç P • pB OQä e Ÿ! „ • m §² /
Server Name	Server < Y	
Heap Memory	Application Serverm# ST – ! Heap Memory ST G	
Thread Pool	Application ServerO PoolJ K L &! Request Thread ST G" Connector(Ajp, Http) ž J §²	
DataSource	Application ServerO PoolJ K L &! Datasource Connection ST G	

Table 41. Web Server • p

VW	I J	X)
Status	Server M` z Y	Unknown • p! Node AgentB GV #ç P • pB OQä e Ÿ! „ • m §² /
Server Name	Server < Y	
CPU	Web Server „ J Ñ%P CPU ST G	
Memory	Web Server „ J Ñ%P Memory ST G	
Thread	Web ServerP Thread e (Active / Max)	
Connected WAS	Web Server¬ __¬3 WAS [> \ M` z Y	år £r [p• p, ?Ø£r M` • p, ¬r £r ² %½\$Ym l ÷ &! #ç B P5

] #ç B V² C8g e R! M• " =ÐF . < 2Ó CD3=.

Table 42. Application Server C8 M•

VW	I J	X)
Thread Dump	Thread Dump < .	$f_{\text{„}} [\setminus (\text{Server Snapshot(dump)}) >$ Dump List ÁÂ í % > Dump () = ...J , O•
Active Service Dump	Active Service Dump < .	$f_{\text{„}} [\setminus (\text{Server Snapshot(dump)}) >$ Dump List ÁÂ í % > Dump () = ...J , O•
Heap Dump	Heap Dump < .	$f_{\text{„}} [\setminus (\text{Server Snapshot(dump)}) >$ Dump List ÁÂ í % > Dump () = ...J , O•
Forced Stop	$\# \zeta - C^a J$	$\Phi M^2 \wedge \ddot{Y} < V^2 - C^a J$
Forced Restart	$\# \zeta - C \div^2 \bullet$	$\Phi M^2 \wedge \ddot{Y} < V^2 - C \div^2 \bullet$



Figure 13. Dump I

!

Heap Dump, Thread Dump, Active Service DumpB <. &' =...J, g e R=.) O@I J Dump! #çm# Out Of MemoryaP 9: , Thread PoolP F= ST, # \$ % p_ a < ; < * „ • " A (æ" NV <. * =.

<. &Û! Dump ŽEm Ōs Thread Dump [\ , Active Service Dump [\ , Heap Dump [\ " €OV DumpB <. * =. <. 3 Dump! Web Application ServerO I ÷ &! Hostã Tœ— ! ' , Thread Dump! {log_home}/logs/tdump, Active Service Dump! {log_home}/logs/sdump, HeapDump () r Dump () r {log_home}/logs/hdump „ J m Tœ3=.

Delete [\ " €O&z Dump () " NCg e R=. Download [\ " €OV Dump () " =...J, g e RI h, =... J, ² VĪ Dump () < ² %½ —¾ Dump () F 2Ó zip æpJ =...J, 3=.

Dump KL kÜP à@r =ĐF . =.

Table 43. Dump k Ü à@

VW	I J	X)
File Name	<. 3 () <Y	ç`B 1 2* f U• J U` <. 3=
Size	<. 3 () P S<f	
Status	Dump e f ² ~ P System \ ServerP • p	Dump <. ² ~ P ² %½P CPU, Memory [> \ Web Application ServerP Ě) L / % STĪ [> t Dump <. ² 2Ó <. * =. View [\ " €O&z <. 3 Status] " » Ag e R=

Table 44. Web ServerC8 M•

VW	I J	X)
Forced Stop	#Ç - C ^a J	¢M ² ^ ¨ < V ² - C ^a J
Graceful Stop	#Ç Graceful ^a J	



Monitoring [> O §² – p q! =Ü aØ3 Node/ServerO >CJ I ÷ &! p, Node/Server[–] G- < İ –! • pAp HË* =.

6.1.2. { | ...%† ‡ vw

Monitoring Dashboardm# Function i j m R! f 4^ [\ (View Detail Chart) " í %&Ü • Ñ* Thread, Memory, # \$% [> B +î ZÖg e R=.

System %

Web Application ServerP Memory, Thread, Service [> B » Ag e R=.

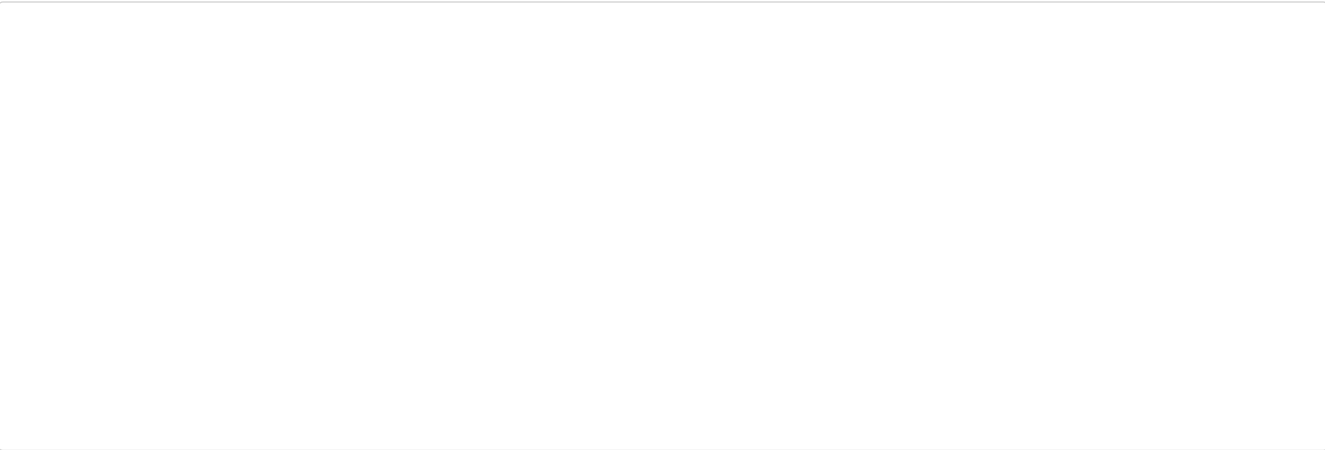


Figure 14. System x

Memory Chart

>² ^ Memory STÎ [> O §² 3=. CD&! [> J! GC Time(Garbage Collection /)² ^), GC Count, Heap Used(Total Memory - Free Memory), Total Memory(#Ç m# ST¼A é Á+L)O R=. oÚP âr ~ í r ST O• * é¢ Heap MemoryB P5* =. Ôs# oÚm# Heap Memory STÎ <) O@A GCOx< Þb è² ^` . _«@I J âr ~ í m ÄÃg „ • âPVÝ* =.



Request ThreadP é¢] r Server ÁÂm# Vİ Web Application ServerP maxThreads « . " GV Æ„ g e R=.

Thread Chart

Web Application ServerO STUP) + " üL&M NV Pool J KL&' R! Request Thread ST –¾" y e R! Line Chart<=. oÚP âr ~ í r STg e R! Request ThreadP é¢XB P5* =. ùf m oÚm# Request Thread eO âr ~ í m ÄÃg „ • âPVÝ* =.



Request ThreadP é¢] r Server ÁÂm# Vİ Web Application ServerP maxThreads « . " GV Æ„ g e R=.

Thread List

Web Application ServerP +, ThreadB » Ag e R=. ~P3 Thread <Y<° Thread • pB M'' I J
(Zõ g e R=. Thread ListP à@r ÞB~ . =.

Table 45. Thread List à @

VW	I J	X)
Thread ID	' å Thread ID	
Name	Thread < Y	
Stat	Thread • p	é Ñ OpP • pO I ÷ 2 ¥ RUNNABLE: OT Thread ¥ WAITING: = ' ThreadP K[Action " ef &M NV ¢M ¼A Thread ¥ TIMED_WAITING: Ò² 3 ¢M² ^ < R! Thread
CPU	p [3 Threadm ¢ * CPU ST² ^	
Tx Id	Úèì ; ID	
Elapsed	ThreadO ef – ! ' de ² ^	
Service Name	ThreadO ef * # \$% < Y	

+ [\ " í ® =ÐF . r • Ñ [> B » Ag e R=.

Table 46. Thread • Ñ [> à @

VW	I J	X)
threadId	' å Thread ID	
threadName	Thread < Y	

VW	I J	X)
State	Thread • p	é Ñ OpP • pO I ÷ 2 ¥ RUNNABLE: OT Thread ¥ WAITING: = ´ ThreadP K [Action " ef &M NV ¢M ¼A Thread ¥ TIMED_WAITING: Ò² 3 ¢M² ^ < R! Thread
threadCpuTime	—÷ ThreadB 1 2* +, ThreadP CPU ² ^	
threadUserTime	—÷ ThreadP CPU ² ^	
blockedCount	Block3 HI	
blockedTime	Block3 Ì @ „ F ² ^	
waitedCount	¢M* ThreadP HI	
waitedTime	¢M* ThreadP Ì @ „ F ² ^	
lockOwnerId	lock3 ObjectB / å * ThreadP ID	
lockName	lock3 Object < Y	
lockOwnerName	lock3 ObjectB / å * ThreadP < Y	
stackTrace	stackTrace	

Active Service List

\$% [> \ VÍ # \$%B üL&' R! Thread [> B » Ag e R=. VÍ [> ã à@r Thread
List à@F åS&h, =ÐF . r ÇO à@< I ÷ * =.

Table 47. Active Service List à @

VW	I J	X)
Sql	—÷ ef ¼A SQLf	

DataSource %

Application Serverm W[3 DataSource [> B » Ag e R=.



Figure 15. DataSource x k Ü

DataSource Chart

Active Connection e Idle Connection eO Chartm >^ I J §^ 3=. oÚP år ~ í r W[3 éΦ Connection eB P5* =. Active ConnectionsO år ~ í m ÄÃg „ • åPVÝ * =. î > â %m# DataSourceB í %&z = DataSourceB +î Z õ g e R=.



éΦ Connection e! DataSource [> aØk ÜP maxConnection « . " GV Æ„ g e R=.

DataSource Information

p[* DatasourceP W[[> B » Ag e R=.

6.1.3. ...%† ‡ I]

DIAGNOSTICS > Policy > Common Rule Setting ÁÃm# +î Z õ Mú W[" g e R=. W[à@r =ÐF . =.

Table 48. +î Z õ K{ Mú W[à@

VW	I J	; ga
Status Range	Monitoring Dashboard m# ResourceP Low, Middle, High M´´ " W[* =.	60% 5i) „ • Low, 60% <•) „ • Middle, 80% <•) „ • HighB P5* =
Diagnostics Interval	Í ³ ËMB W[* =.	10000(ms)
Dump Limit	] #ç P Dump(Thread/ActiveService/Heap) s t uL ž Dump Ōe C* (0r • C* " P5)	200(Ö)

Chapter 7. Topology

] ² %½P - . —¾" * ° m a P y e R l h, W X \ W [M • " C D & ' , U " + î Z õ \ M ` /¼p C8B g e R =.



Figure 16. Topology k Ü

7.1. : x ?,

System † û, u • J p † û, U " + î Z õ † û l J - & 3 =.

¥ System † û

a Ø 3 System L %Ú B Í , æ p J C D * =.

Í , ã P ² %½ Ò 56P Þ < ï r ² %½ P • þ B P 5 & ! ' • þ B § ² & ! M ¨ r ² %½ " - . & ! Resource ¯ Í ³ ¬ F m Ô s 3³ l J ° Ò 8 ° Ž • =.

è q Š < Æ MNO : ² %½ " - . & ! + , # Ç P U " S T Î < Low A „ •

è B | < Æ MNO : ² %½ " - . & ! + , # Ç P U " S T Î < Middle A „ •

è • Ž < Æ MNO : ² %½ " - . & !) Y # Ç P U " S T Î < High A „ •

² %½ Ò & ³ P • • MNO r ² %½ ã P WAS6P ñ ò ê ™ ² ^ " P 5 & ' , ' ' " MNO r — ÷ S T U e (é Ä 5 & ` ·) / 9 Ê ¡ H S T U e B P 5 * =.

!

U " S T Î P Low, Middle, Highm Ç * M ¨ r DIAGNOSTICS > Policy > Common Rule Setting > Dashboard à @ m # Æ „ g e R =.

¥ u • J p † û

² %½ Ž ^ , ¯ # Ç Instance - . —¾" u • J p o Ú J > z ¨ =.] Nodem W X * WEB Server ¯ WASB > f g e R ' , # Ç • þ [> B » A g e R =.

!

¥ U" +î Z õ † û

Node ServerP CPU, Memory a • Ñ U" +î Z õ [> B CD* =.

² %½@Ø • 6m R! I] [\ " GV =DP Sà" Æ„ g e R=.

Chart

¥ Refresh Interval : u • J p † û P ' < Z WX Ë M

¥ Refresh Topology Chart : u • J p † û P oÚ ğ L! ÁŽ' <Z [H. – § \ μ"

System List

¥ System @Øm > z œ System í % \ " # Æ„

Elements

¥ Show Endpoint : Endpoint † û §² z Y W[

¥ Show Edge Info : Edgem • Ñ[> §² z Y W[

¥ Show Server Name : ServerØ §² z Y W[

Transparency

¥ Node : u • J p † û P Node óÒt B W[

¥ Edge : u • J p † û P Edge óÒt B W[

7.2. " • t c 5– v w

u • J p m# ô +, m Ôs [> B - &&z > z `` =.

¥ View All : ĵ H [> B > z `` =.

¥ Low : #ç P U" STÎ < Low A A%×%i - &&z > z `` =.

¥ Middle : #ç P U" STÎ < Middle A A%×%i - &&z > z `` =.

¥ High : #ç P U" STÎ < High A A%×%i - &&z > z `` =.

¥ Stop/unknown : ¼p 3 A%×%i - &&z > z `` =.

7.2.1. Control

E2E (End to End)K ~ &m ClientY Z DatabaseÉ p • Ñ* +î Z õ [> \ C 8 M• " CD* =.

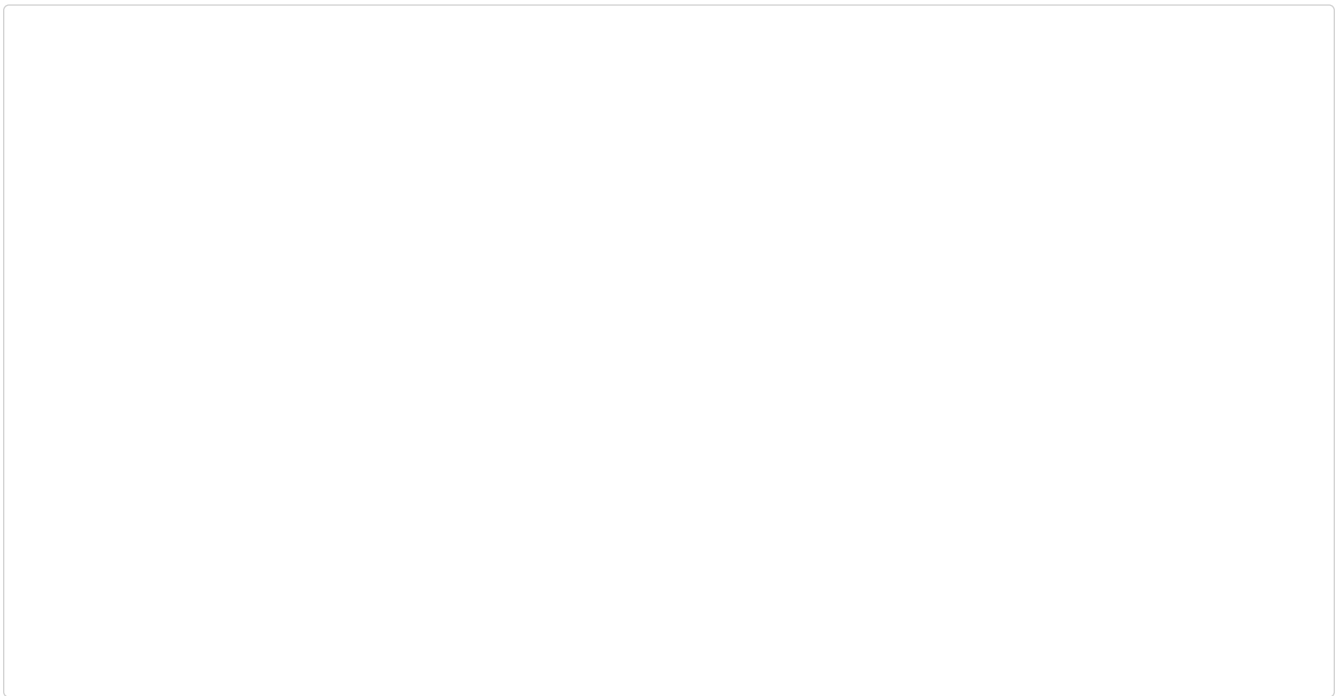


Figure 17. Topology Control

CLIENT 5–

Client! STUB õ&h, STUO Web#çm) + " È' , ! ös • T k Ü Rendering ² ^ \ Script error ã T" » A g e R=.

WEB 5–

WEB † ûm#! WX3 WEB Node ⁻ WEB #ç [> B CD&' #çP C8 g eR=.

¥ - . [>

Web Node! Web #çO WX–! † ûl J ^ , ž #ç WX —¾" » A g e R=.

¥ +î Z õ [>

Web Nodem#! Mú@l J CPU, Memory, Disk • p [> B CD* =.

Web Serverm B• %B } = ¢Ü k ò æpJ #çP CPU, Memory, Thread • p [> B CD* =.

Web Node⁻ ServerB í %&Ü u • J p † û • 6m R! U" +î Z õ † ûm]] P >² ^ • Ñ +î Z õ [> O CD3=.

è Node : CPU, Memory, Disc, Network⁻ Mú [>

è Server : CPU, Memory, Thread, QoS⁻ Mú [>

!

^ , • ³ P Ž < ÷ (^ , Ò § ² 3 † û) p „ Èr ^ , • m R! #ç 6P • p
¼ Oœ Critical* £l J ° Ž m=., B 68 ^ , • m 3¢P #çO R! ' ¿
¼ * ¢O High• p < Ü (= ´ #ç 6P • p! Middle | ! Low) ^ , P Ž < ÷
p „ Èr HighB P5&! £l J § ² * =.

¥ C8 M•

Serverm ¢V Èd 3Op C8 M• " CD* =.

1. Server Control : Start, Stop, Service Control

!

Service Controlr • ¼³ @² p1 M• " CD* =. <ýr 9: # \$ % ; <²
<B e[* /%B WASm êø p1&' < WASB š~ g Web
#ç (@² #ç)B - . * Q 9: O ; <3 # \$ % B) + , r Web #ç 6<
@² #ç J # \$ % B 1 > " & z # \$ % O [• @I J CD-d &! ñ | <=.

C8² ^, C8Wà (Header, Cookie, URL) \) + " forwarding g #ç B [P Q
Tœ&Ü [P 3 ãTm Ôs >² ^I J 689!) + " VÍ #ç J _¬&z
#ç ÷M` Ý< # \$ % B CD* =.

2. Move to : Configuration

APPLICATION 5-

APPLICATION †ûm#! WX3 WAS Node¯ WAS [> B CD&' #ç P C8 g eR=.

¥ - . [>

WAS Node! WASO WX-! †ûI J ^, ž #ç WX —¾" » A g e R=.

¥ +î Z õ [>

WAS Nodem#! Mú@I J CPU, Memory, Disk • p [> B CD* =.

WAS Serverm B• %B } = ¢Ü k ò æpJ #ç P CPU, Thread, Heap • p [> B CD* =.

WAS Node¯ ServerB í %&Ü u• J p †û • 6m R! U" +î Z õ †ûm]] P >² ^ • Ñ
+î Z õ [> O CD3=.

è Node : CPU, Memory, Disc, Network¯ Mú [>

è Server : Warning, CPU, Memory, Thread, QoS¯ Mú [>

!

^, • ³ P Ž<÷(^, Ò §² 3 †û) p„ £r ^, . m R! #ç 6P • p
¼ Oœ Critical* £I J ° Žm=. , B 68 ^, . m 3¢P #ç O R! ' ¿
¼ * ¢O High• p<Ü(=´ #ç 6P • p! Middle | ! Low) ^, P Ž<÷
p„ £r HighB P5&! £I J §² * =.

¥ C8 M•

Serverm ¢V Èd 4Op C8 M• " CD* =.

1. Server Control : Start, Stop, Forced Stop
2. Manual Check : Thread Dump, Active Service Dump, Heap Dump, Dump List
3. Move to : Configuration, System, Datasource

DB 5-

DB †ûm#! WAS¯ _¬3 Database [> B CD* =. Database! RESOURCE ÁÂm# aØ-8
R8Ý * =. ^, ! =´ †ûFP `) &d §—&M NV O• P ^, J §—&' R=.] DBm ¢*
+î Z õ [> ° C8 M• r CD&p q! =.

Edge] /

_¬í r] A%×% ^, | ! A%×%¯ Database^P _¬" P5&h, _¬3 Connection eB
° Ž• =.

¥ Client-WEB : Connection e

¥ WEB-APPLICATION : Active Connection e

¥ APPLICATION-DB : Active Datasource ST G (%)

End to End +î Z ÕM• r Mú@l J off• þJ W[– 8 R=.

Ôs# Client-WEB, WEB-APPLICATION S<P ös• T ù} õ ñòê™² ^ | !
ServerP ñòê™² ^" > M NV#! =ÐP " #¢J W[" VË8Ý* =.

1. manager.conf () m# diagnostics.e2e.enable=true J W[

2. web serverP httpd.conf () m# httpd-eum.conf () Ë ú VC

```
<IfDefine MOD_EUM>
Ë #LENA E2E Monitoring Extension settings
Ë Include ${INSTALL_PATH}/conf/extra/httpd-eum.conf <-- <Y&
Ë ú VC
</IfDefine>
```

3. web serverP eum/eum.properties() m# agent_enable] " trueJ e[

E2EW[" û Q _¬í m CD–! [> ! =ÐF . =.

¥ Client-WEB : Connection e(Client ös• T ù} õ ñò ~ J ² ^ (ms)/Web
Server ñòê™² ^ (ms))

¥ WEB-APPLICATION : Active Connection e(WAS ñòê™² ^ (ms))

¥ APPLICATION-DB : Active Datasource ST G (%)

Chapter 8. Admin

8.1. IAM

ManagerP STU KL \ STU ž ÁÂ Å* KL M• " CD* =.

8.1.1. Users (' ' " 1 2)

' ' " WY

ADMIN > Users ÁÂm# Manager STUP <. ,e[,NC M• " CD* =.

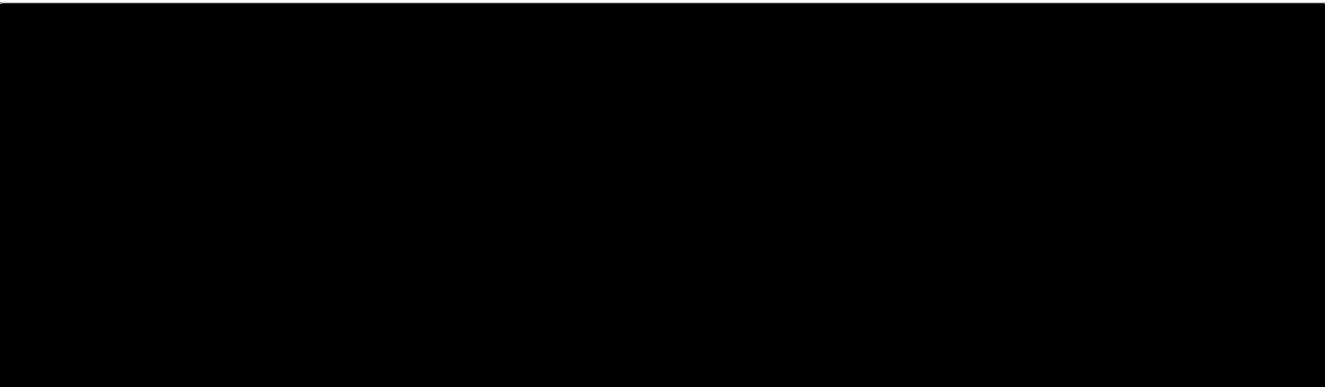


Figure 18. Users k Ü

STU KLP «. r Þ³´ . =.

Table 49. STU KL «.

VW(*! _Ra)	I J	X)
Use ID(*)	STU | ž U	
User Name(*)	STU <Y	
Password(*)	STU \$ĩ 8š	\$ĩ 8š! Kef U, üU,†fU ýHP é/ 8U <• <8Ý * =
Updater	STU ' <Z e[\ <. U	
Last Update	STU ' <Z e[\ <.) U	
+ MNO	New [\ ,R] [\ " €O&z í %3 Å* [> OÆ„ ¼\ " §²	
- MNO	` = [\ " €O&z í %3 Å* [> O NC/" §²	

!

Mú@I J KLU Å* " OÍ I [" É Õ CD* =.(\$• T) CD–! I [\$m
STUB ÇO&z ST&MB Åœ* =.

' ' " ZY

1. New [\ " €O&z - » STU aØ" `` \$* =.

2. STUID,STU Ò,STU O%>, BEP* =.

è STU O%>, ! | šk-8 Tæ3=.

è O%>, ! | pUeO8~20U,†8 ¢/f U,üU,Kef U(!@#\$\$%^*+=-) WHI J • . * =.

3. Save [\ " €O&z STU [> B Tæ* =.

!

¥ Password | šk! Vy a' L- (SHA-512)" ST* =.

' ' " R]

1. e[g STUB í %* =.

2. R] [\ " €O&z STU Ò,STU O%>, B Æ„ * =.

è STU O%>, ! | šk-8 Tæ3=.

3. Save [\ " €O&z STU [> B Tæ* =.

!

¥ Manager m J ¿ A² 7 8 <• >O&Ü Vİ P<s! ! " • pO-8 STg eO
Ÿ=.

¥ ! " • pB VC&M NV#! STU KL kÜm# Vİ P<sP O%>, B
e[VË8Ÿ * =.

¥ O%>, e[" NV Manager m J ¿ A * I [< Ÿ! „ • m! ,
\$LENA_HOME/bin/reset-manager-pw.sh B >f &z O%>, B e[g e R=.

' ' " ` =

1. NCg STUB í %* =.

2. ` = [\ " €O&z STUB NC O• * • pJ Æ„ * =.

3. Save [\ " €O&z STU [> B Tæ* =.

!

STUO1Ò Òr „ • ! NCg e Ÿ=.

8.1.2. Auths (—~ 1 2)

Manager! ÁÂ ž Å* KLB NV Å* ¿ M" <. VÝ * =. ADMIN > Auths ÁÂB GV Å* ¿ M"
<. , e[, NCg e R=.

—~ WY

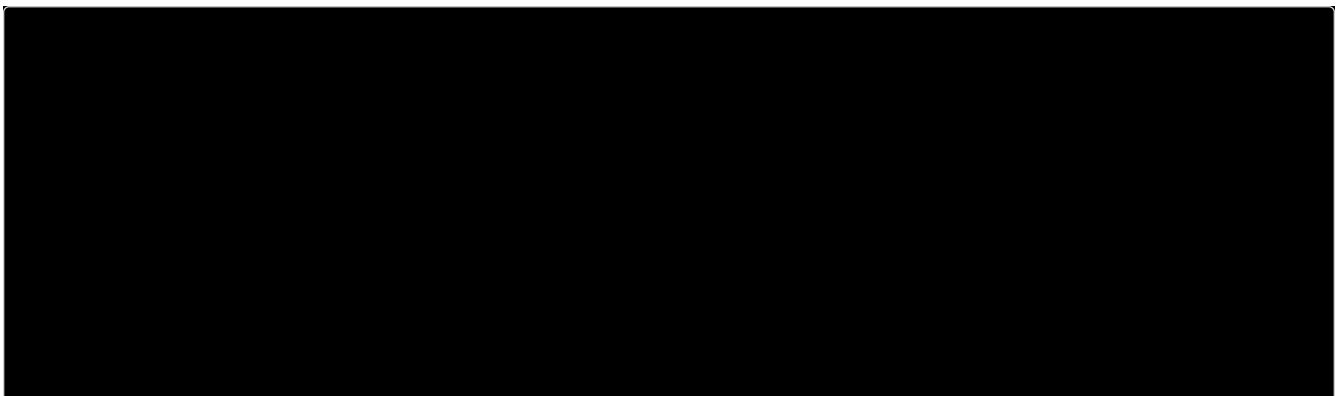


Figure 19. Auths k Ü

Å* KLP « . r Þß⁻ . =.

Table 50. Å* KL « .

VW(*! _Ra)	I J	X)
Auth ID(*)	Å* | ž U	
Auth Name(*)	Å* <Y	
Description	aØ3 Å* m ¢* WÒ	
Updater	Å* ' <Z e[\ <. U	
Last Update	Å* ' <Z e[\ <.) U	
+ MNO	New [\ , R] [\ " €O&z í %3 Å* [> O Æ„ ¼\ " §²	
- MNO	` = [\ " €O&z í %3 Å* [> O NC/ " §²	

—~™,

1. New [\ " €O&z - » Å* aØ" `` \$* =.
2. Å* ID, Å* Ò, Å* WÒ" EP* =.
3. Save [\ " €O&z Å* [> B Tæ* =

—~R]

1. e[g Å* " í %* =.
2. R] [\ " €O&z Å* Ò, Å* WÒ" Æ„ * =.
3. Save [\ " €O&z Å* [> B Tæ* =.

—~` =

1. NCg Å* " í %* =.
2. ` = [\ " €O&z Å* " NC O• * • þJ Æ„ * =.
3. Save [\ " €O&z Å* [> B Tæ* =.

8.1.3. User-Auth Mapping (‘ ’ “ —~ 1 2)

Manager STU! ÁÂ ST Å* #y" NV é/* 1ÕP ¿ Mm /« - 8 R8Ý * =. KLU! Å* ¿ M" í %&z STUB p«² g e R=. "Å* KL" kÜ" GV aØ* Å* ¼ &° B í %&' z ® \$q ç⁻ " ST&z STUP Å* " C8* =.

‘ ’ “ —~š>



Figure 20. User-Auth Mapping k Ü

STU Å* KLP «. r Þβ⁻ . =.

Table 51. STU Å* KLP «.

VW	I J	X)
Å* Ò í %	"Å* KL" k Ü" GV aØ* Å* L%ÚJ - . 3 î > â %	
ID	STU | ž U	
Name	STU <Y	

' ' " —~ œ•

- STUB p«² g Å* " í %* =.
è Å* í %² í % O• STU⁻ í %3 STU O k Üm ~P3=.
- í % O• STUB í %* =.
- STUB p«² Sn° C\$² ã =.
è ž r Ÿ í ϕ [\ " €O&z í %* STUB p«² ã =.
è £ ¤ Ÿ í ϕ [\ " €O&z +, STUB p«² ã =.
è ž r ¥ í ϕ [\ " €O&z í %* STUB C\$² ã =.
è £ ¤ ¥ í ϕ [\ " €O&z +, STUB C\$² ã =.
- Save [\ " €O&z STU Å* KL [> B Tœ* =.

8.1.4. Menu-Auth Mapping (| § —~ 1 2)

LENA Managerm# <. * Å* ž J ÃÄ O• * ÁÂB W[g e R=. Å* í %" GV <. * Å* ¼
ÁÂB W[g &° P Å* " í %* =. LENA Managerm aØ3 +, ÁÂB > z È! ÁÂ @Ø ¼ ÃÄ
C8B W[g ÁÂB í %&' ÁÂÅ* " W[* =.

| § —~ š>

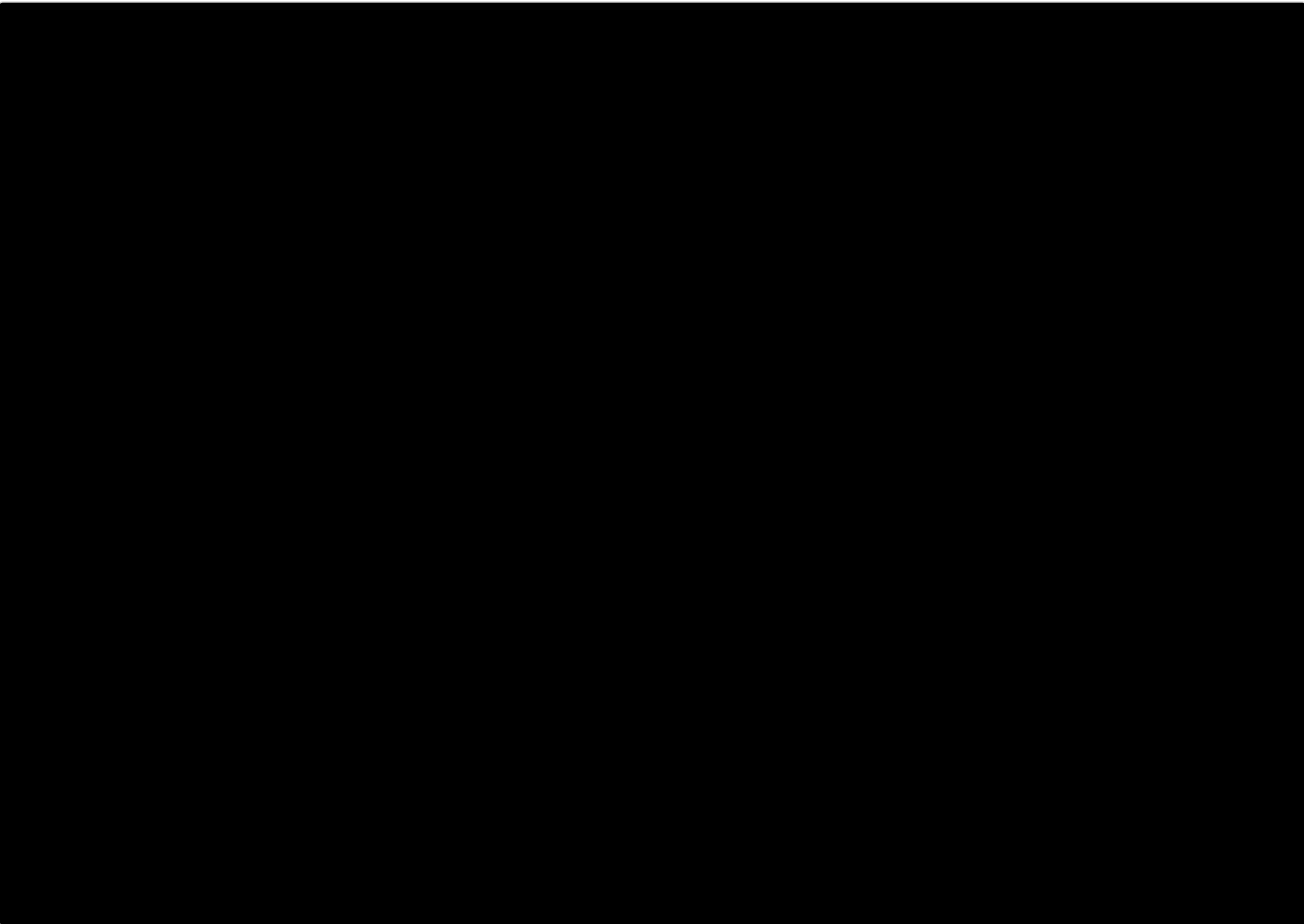


Figure 21. Menu-Auth Mapping

ÁÂ Ã* KLP «. r Þβ⁻ . =.

Table 52. ÁÂ Ã* KLP «.

VW	I J	X)
Å* Ò í %	"Å* KL" k Ü" GV aØ* Å* L%ÚJ - . 3 î > â %	
Menu Name	LENA Managerm aØ3 ÁÂ ¼ 56 ÁÂ @Øm# í %* ÁÂ <Y	
Auth	í %* Å* P ÁÂÃÄÖ• z Y §²	Default "N"

!

"SERVER", "RESOURCE" ÁÂP &N k Üm# Node, Server, Resource " ÇOg „ •
U` I J "ÁÂ Ã* KL" k ÜP ÁÂ @Øm ÇO* à@< WX3=.

Ôs# - » ÁÂB ÇO&' Ç" „ • "SERVER", "RESOURCE" &N k Üm#]
à@" aØ \ <. &Ü 3=.

! § —~ œ•

1. Å* " W[g ÁÂB í %* =.
è Å* í %² ÁÂm Ç* Å* Ép WX3=.
2. ÁÂ @Øm# Å* " W[g ÁÂB í %* =.
è ÁÂ í %² ÁÂ Å* @Øm ÁÂ Å* < §² 3=
3. Å* Æ„ < () g „ • Y{ r N" í %* =.

4. Save [\ " €O&z ÁÃ Å* [> B Tœ* =.

8.2. License

ManagerB GV] Nodež —÷ @T3 s<í %B WX&' %- g e R! M• " CD* =.

8.2.1. License WY

Licensek Ü" • Ü Nodež J —÷ @T3 LicenseP @Ø" WXg e R=.

LicenseP • p! Status à@" &' > Ü » A g e R=.

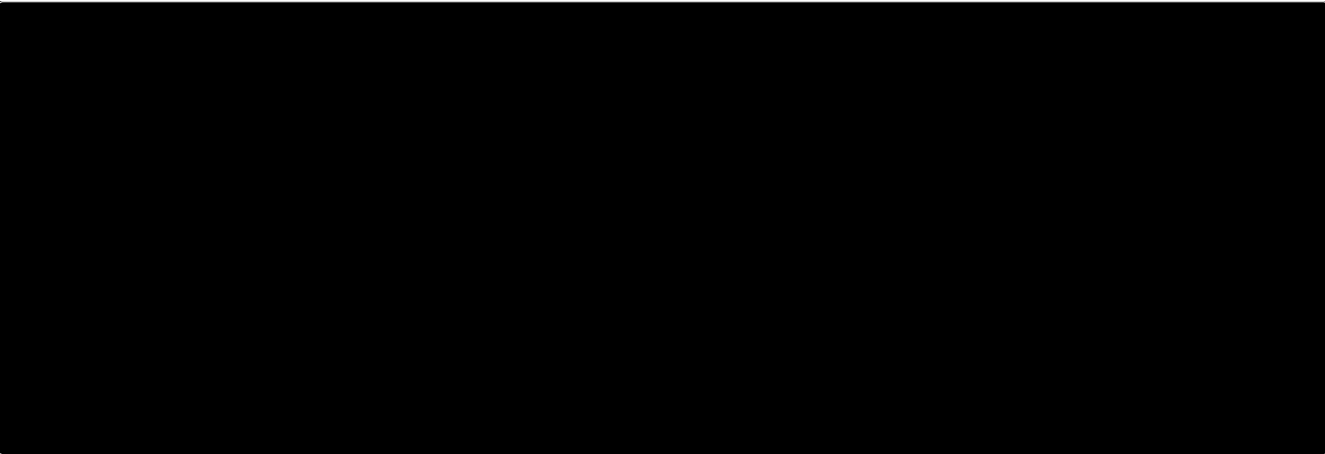


Figure 22. LicenseP @Ø k Ü

8.2.2. License v w

LicenseP @Ø" €O&Ü LicenseP • Ñ [> B » Ag e R=.

• Ñ [> à@r Þß⁻ . =.

Table 53. LicenseP • Ñ [> à@

VW	I J	X)
Node Name	Node Ò	
Type	s<í %- &	Trial, Standard
Customer Name	- á ' (S Ò	
System Name	WX3 ² %½ Ò	
Issue No	s<í % ; f 8Š	
Issue Date	s<í % ; f) U	
License Term	s<í % ' T M^	
Engine Path	LENA Engine WX „ J	
IP Address	NodeP IP Ě /	
Hardware ID	H/WB A | &! ID	MAC Address | ! HostÒ

VW	I J	X)
Contract CPU Core Limit	I Š3 é¢ Core Õe	
CPU Core Limit	>C 6[3 Core Õe	
Contract Instance Limit	I Š3 é¢ InstanceÕe	
Instance Limit	>C 6[3 Instance Õe	
Status	s <í % å" . z Y	



s <í %P i J M^ 15) i YZ a) ÁÑpB CD* =. a) ÁÑp! Manager • 6
• ³ P " MNO m# » A g e R=.

8.2.3. License €t © / ª ?

€t ©

^ , @Øm# - » License B @T&' U &! ^ , B í %&' @Ø &³ P Upload [\ " ST* =. Vİ ĸ " €O&Ü License òJ , k òI < • L! ' < I m# ; ø, r License () " ½P òJ , &Ü í %* ^ , 6m LicenseO @T 3=.

ª ?

^ , @Øm# License B µ- &' U &! ^ , B í %&' @Ø &³ P Restore [\ " ST* =. Vİ ĸ " €O&Ü ~òV É' * () J LicenseO µ- 3=.

8.2.4. License 1 « • ¬ - { | ¤ ®

License @ØWX k Üm# NodeB í %&' Check System Info [\ " €O&Ü, License ; øm () *
² %½ —¾" » A g e R=.

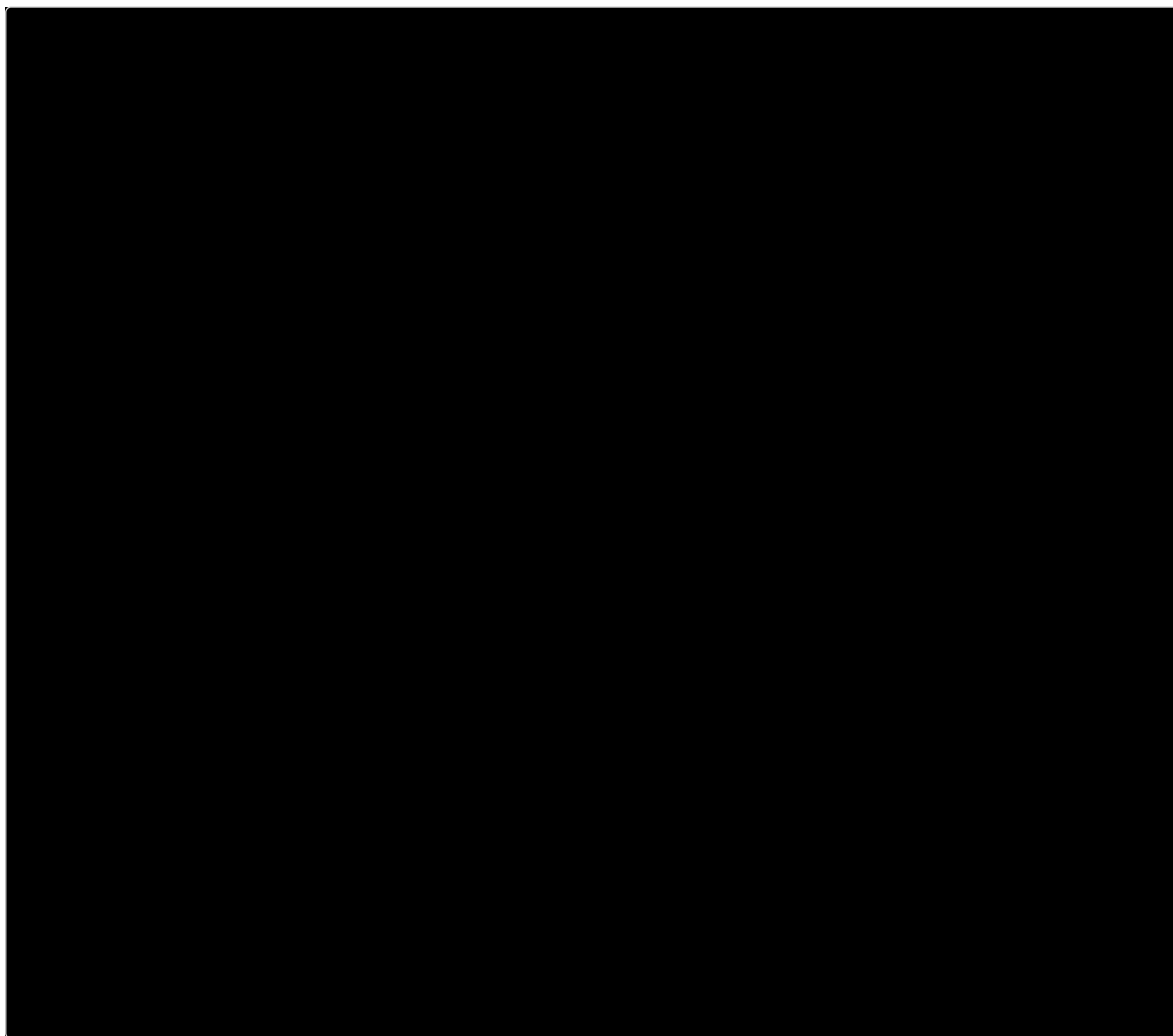


Figure 23. System Information

```

CLI# m# t ] NodeŽ License —¾" WX&M N* Shell ScriptB CD* =. Shell ( ) r
${LENA_HOME}/bin/check-license.sh <=. < ScriptB >f * ¬FP SD! ÞB¬ . =.

```

check-license.sh > f ,

```
[bi n]$ ./check-l i c e n s e . s h
*****
[System Information]
Ê Hostname : solweb2
Ê HostAddress : 127.0.0.1
Ê Hardware ID : 52:54:00:E9:AC:A1 ( 52:54:00:E9:AC:A1 )
Ê Engine Path(LENA_HOME) : /engn001/l ena/dev
Ê Node UUID : e46da220-db50-3854-84a0-7b61e1b6e7cd
Ê CPU Core : 4
Ê HyperThreading : DI SABLED
Ê Current Date : 20180705

[License Information]
Ê License Status : true [License is valid.]
Ê ISSUE_NO : 201807041532438300001
Ê TYPE : Standard
Ê CUSTOMER_NAME : LG
Ê SYSTEM_NAME : CNS
Ê SYSTEM_TYPE : PROD
Ê HARDWARE_ID : 52:54:00:E9:AC:A1
Ê LENA_HOME : /engn001/l ena/dev
Ê CONTRACT_CPU_CORE_LIMIT : 8
Ê CPU_CORE_LIMIT : 8
Ê CONTRACT_INSTANCE_LIMIT : 8
Ê INSTANCE_LIMIT : 8
Ê START_DATE : 20180501
Ê END_DATE : 20190531
Ê LI CENSE_KEY :
H2VaDEE9fj FI vHBRsQeGXasYT5I 4tBc6ebayNI dtVZ5/I j 4/EMOmYf38karMTKgCllmPMMFa8B0EFt
5zRfBc/I i 0xI mDgy
j 0+i q30ABfJoyAhY3nWBVJhBy7h0U3hzJWr1hyCuZMFAHquL4di nwWAqmJeL+j ntJKFufD38vdF2Yw
KEoRNH9dGQnqXZH0
U8wQZmN4UHK5YB5/06YI UffNGU3wyzj fKCff9GoI u9zQAsSZ358ptj C/TBUy+ccvLa75H32XPxi NSS
xytn0hGFbcVc61kv
zi 7YMNUGnuEyDEQ/dhFKxJ17i j UQBZj 5xbFQ9qUTzL1QKGLI +cbYVsr6kvZg==
*****
```

~P~! à@r + æm#P WÖF `) &h, License ; øm () * MÚ[> B ~P& J License ; ø
) + ² m z T 3 =.

!

~P à@ ¼ "HyperThreading" r HyperThreading STz YB HÈ&! ýI J ,
HyperThreading ST ² òL CoreP 2peJ Coree B €[* =.

8.2.5. Host; ~ License æ® I]

License! I Šm Ôs Mac Address |! HostÒI J ; ø¢• H/WB HÈ* =. MÚ W[r Mac
Address M" < J , HostÒ M" I J License HÈB >f &M NV#! Linux/Unix OSB M" I J

```

${LENA_HOME}/binm NX* start-agent.sh, check-license.sh( ) F ] Application ServerP setenv.sh
( ) " • 8# =DF . < e[ * =.

```

```
start-agent.sh ( ) W[ (Æe $JAVA_OPTm ÇO)
```

```
JAVA_OPTS="$\{JAVA_OPTS} -DI i cense. check-type=hostname"
```

```
check-license.sh ( ) W[ (=Ð à@ Ě ú VC)
```

```
_JAVA_OPTS="$\{_JAVA_OPTS} -DI i cense. check-type=hostname"
```

```
] Application ServerP setenv.sh ( ) W[ (=Ð à@ Ě ú VC)
```

```
CATALINA_OPTS=" $\{CATALINA_OPTS} -DI i cense. check-type=hostname"
```

8.2.6. • °] / Š>

```

s<í % @Øm# ² ^[ > B WX&' Φr ^, B í % Q, Check Time Info [ \ " €O&Ü í %*
^, 6m Φ* ² ^F Ž\I P [ > B »A g e R=.

```

8.3. Security (n X ¬ = ±)

```
Application Serverm IP! ! URLMOI J STU ) +" C* &! M• <=.
```

8.3.1. Rule Setting (Rule I])

```

K[ IP° URLm# ) +" C8&' Φr „ • k Ü" GV - » Rule" W[ * =. - » Rule W[ \ Rule
NCP ĖP. " CD&M NV –fM• " CD* =. j H Applicationm @T–! Server« . r
m®4<pJ üLg e R=

```

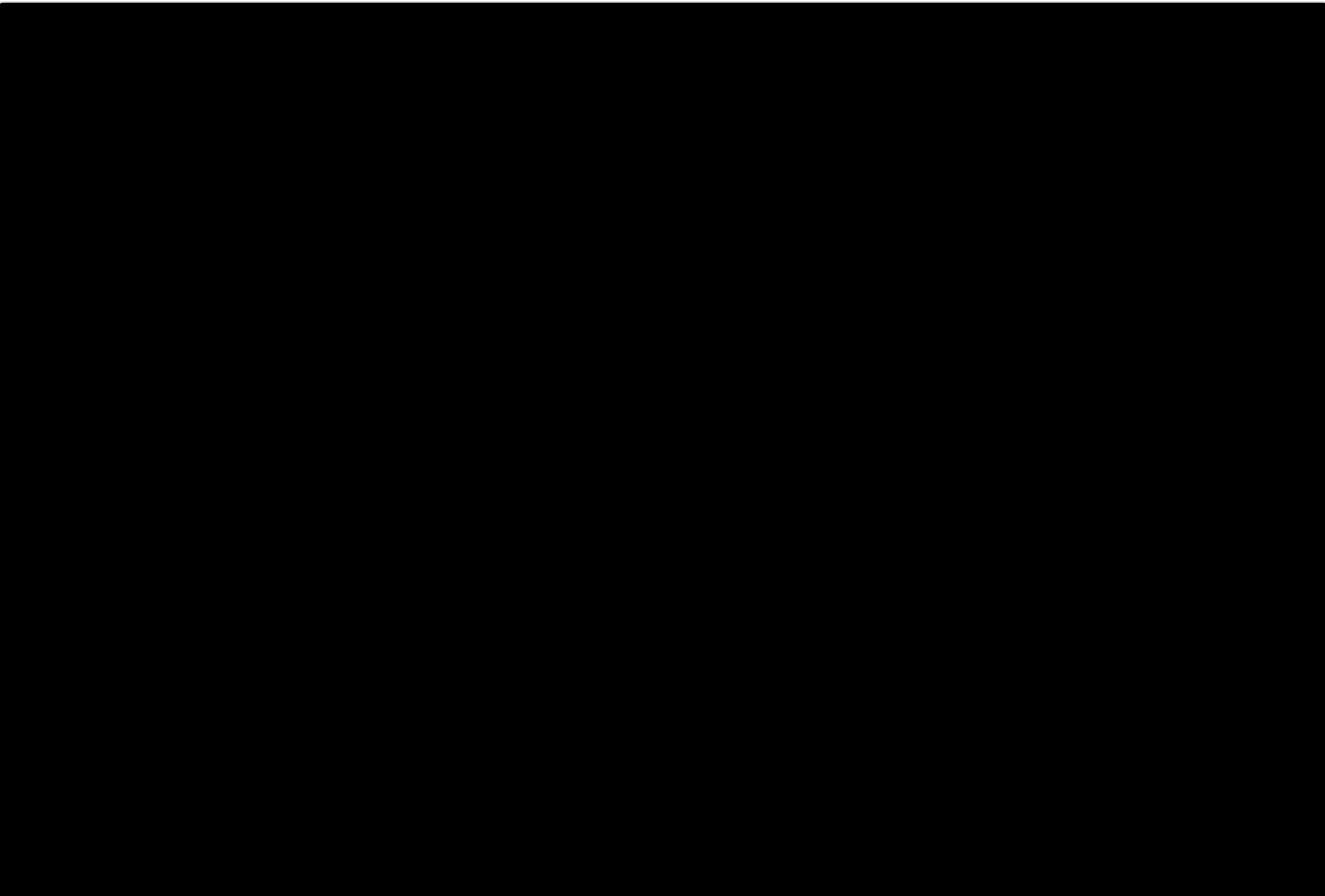


Figure 24. Rule Setting k Ü

!

Rule @ØP Use i j r Vİ Rule< Application Serverm @T– 8 R! p z YB ° Ž• =.

Rule ÇO² W[O• * «. r ÞB⁻ . =.

Table 54. Rule ÇO² W[O• * «.

VW(*! _Ra)	I J	X)
Rule Name(*)	ÇO&! RuleP < Y	
Description	ÇO&! Rulem Ç* WÒ	
Rule Type	C8g ³ N	IP, URL
Allow IP(*)	' Og) + IP	[ » | æþJ EP O•
Deny IP(*)	nYg) + IP	[ » | æþJ EP O•
Control Time(*)	Rule" @Tg ² ^³ N	
Error Message(html)(*)	C8J AV Filtering3) +m Ç* ~Pg m® 4<p	

!

C8â æ< "IP with DateTime"A Rulem Proxy ServerJ ¼I –! Application Server B @T* =Ü, Proxy ServerP > . @ K. I J AV User IPB - g e Ý8 Rule @T< –p q" e R=.

!

<. 3 Rule ¼ @T 3 Ruler NC g e Ý=.

8.3.2. Rule Applying (Rule 2 ')

ÇO3 Rule ¼ &° B í %&z Application Serverm @T * =. @T ĖP. " NV Ruleå æ, @T ³ N, RuleÒm ¢ * – ĖM• " CD* =.

Rule @Øm# &° B í %&z Rule @Tm# \$q ç 6" <T&z @T ¢• " í %&' , On/Off [\ " ĖO&z @T \ Tœ* =. @T ¢• m# C\$B &' ¢" „ •mt \$q ç 6" <T&z C\$² ā =.

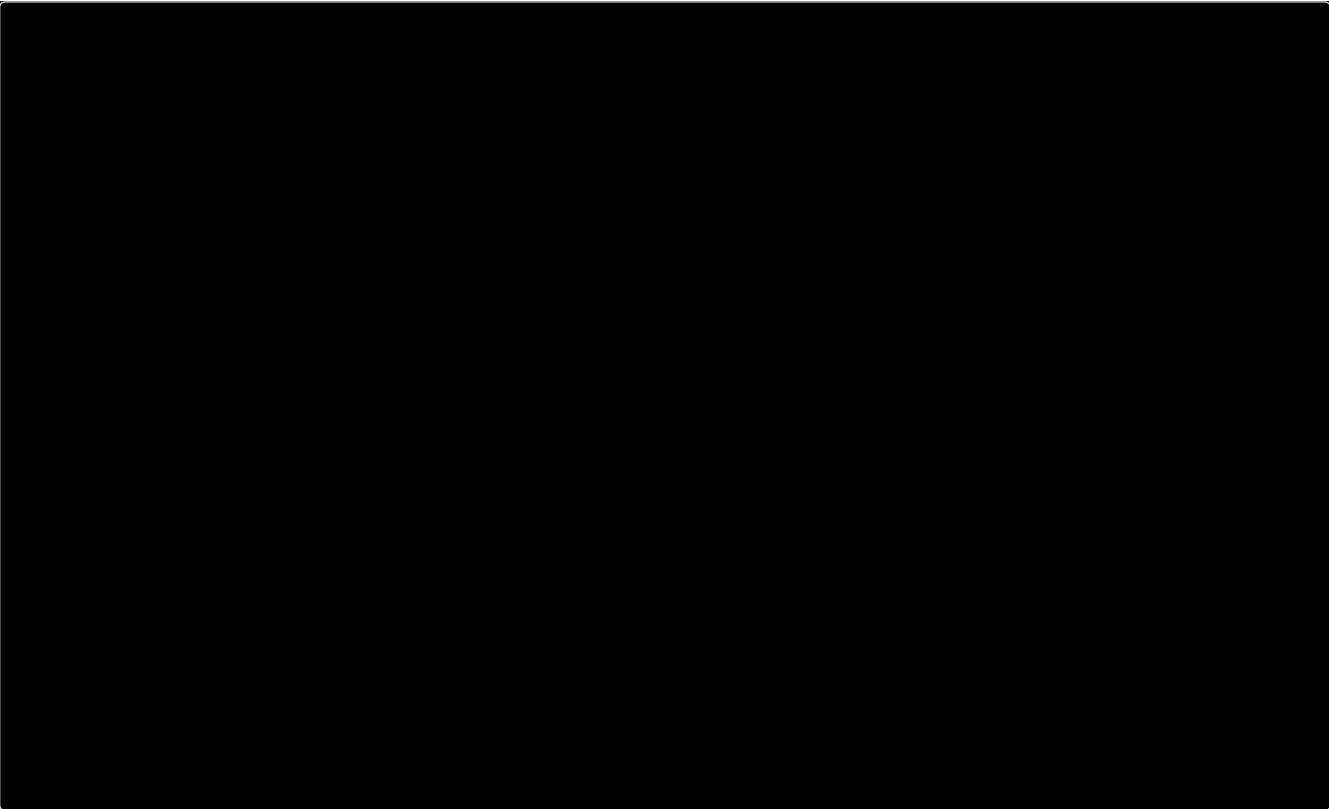


Figure 25. Rule Applying k Ü

Rule —¾ \ @T k Üm# ST–! «. 6r RuleW[k ÜF åS&h ÞBP «. 6r ÇO@A «. 6< =.

Table 55. ÇO@A « .

VW	I J	X)
Node Name	a Ø3 Node group &NP Node Ò	
Server Name	a Ø3 Node&NP Server Ò	

!

í %* Rulem – » ¢• < ÇO^ „ • @T ³ Nm Ôs server.xml { r context.xml m ÇO– ' , @T3 ¢• m# C\$g „ • NP W[() m ÇO3 Rule W[< NC3 =.

8.3.3. Service Control Log (Rule 2 ' 3 ´ Š>)

Rule< @T3 à@6m ¢ * ÜL ¬FO @ØI J ~P3=. ÜL ¬F »AP ĖP. " NV Ruleå æ, @T ³ N, RuleÒ, J ç ² ^m ¢ * – ĖM• " CD* =.

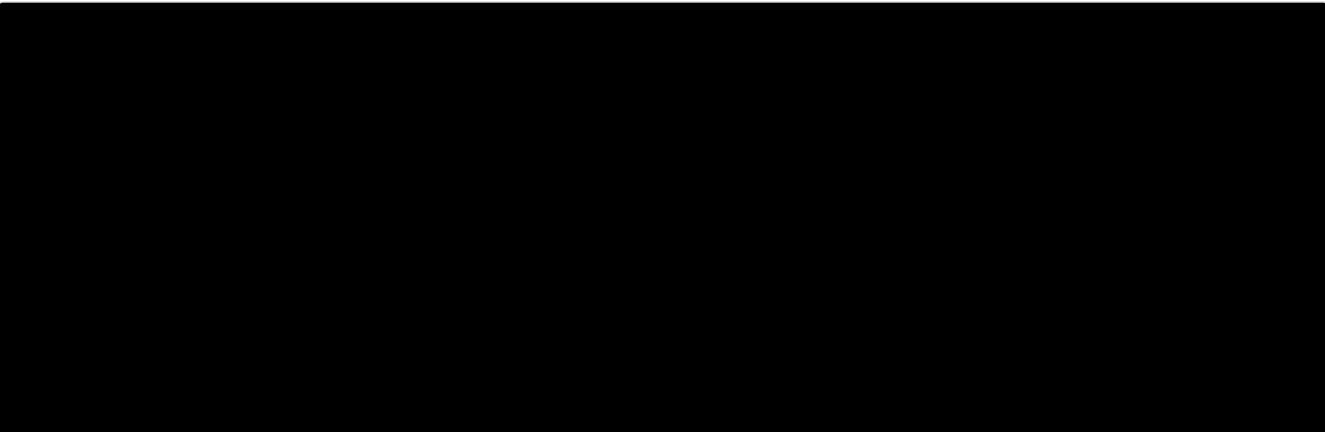


Figure 26. Service Control Log k Ü

ÜL @Øm# ST–! «. 6r ÞΒ´ . =.

Table 56. J ¿ [> P à@

VW	I J	X)
Controlled Date	RuleW[< @T 3) + P ÜL² ^	
Remote Address	ÜL 3 " ëp Æ/	
Request URL	ÜL 3) + P URL	
HTTP Method	ÜL 3) + P HTTP Method	
Rule Ò	) + " ÜL&! ' @T 3 Rule <Y	

Rule <PP „ • ManagerP /conf/manager.conf W[() ã access filter log , H Listener STzYB trueJ W[VÝ * =. LogP „ •] #ÇP logs • } ã access_filter.log."Çè".txt () m MØ–h ÆM@I J Manager O] server P log B , H&z Database m Tœ* =. (<ù , H3 Log ! access_filter_log."Çè".txt.gathered () m backup3=) Databasem , H3 Log! ÜL@Ø k Üm# » A O• &=.

!

manager.conf ã W[() à@P W[, ! ÞΒ´ . =.

```
#access filter log , H L%- STzY \ ` • ÆM(?) default!  
false, 60  
accessfilter.listener=false  
accessfilter.interval=60
```

8.4. Patch

WX3 LENAm Ç* M• Öí \ Ç¿ e[" N* OXB CD* =.

Patch! %¸ () æþJ CD–h, . Ü@I J ` • &! Java„ J Ñ%J ` • * =.

Patch M• r CLI \ Management UIB G&z >f < O• &h, OX² # \$%m f CO ; <&! „ • Restore M• " G&z " µ g e R=.

OX " #! =ÐF . =.

1. OX() òJ ,
2. Manager OX @T
3. Node OX @T
4. #Ç (Application Server, Session Server) OX @T
5. OX Commit

µ- " #! =ÐF . =.

1. #Ç OX µ-
2. Node OX µ-
3. Manager OX µ-
4. µ- Commit

CLIJ OX&! ñ| r AppendixB ä' * =.

8.4.1. Overview

OX() P òJ , M• " CD&h, Manager¯] Nodež Node AgentP OX O†• p [> B WX* =.

Patch q r € t ©

Patch Info † û m#! á î T m òJ , 3 OX() ¼, é• N Çj P • Ñ[> B §² * =.

Table 57. Patch Info à @

VW	I J	X)
Patch File Ver.	OX() P Çj [>	
Release Date	OX() P p1) U	
Patch Note	<div>vw(µ¶) [\ " í ® • Ñ* OX^ Ú ãT" WX* =.</div>	OX^ Ú k ò§²

OX() " òJ , &! F[r =ÐF . =.

1. € t © [\ " € O* =.
2. OX O• • pApB » A Q [• <Ü OX() òJ , B N* k ò" / ...=

!

- OX O• • p Wà
1. Managerm a Ø3 NodeO + É M` • pz Ý* =.
 2. patchO commit• pz Ý * =.
 3. manager M` I J node¯ serverO + É . r Çj <8Ý * =.
 4. managerm a Ø– p q r #Ç O I ÷ & p q! =.
 - a. unregister3 #Ç I ÷² managerm a Ø
 - b. ^ , RÍ &N servers• } m #Ç O I ÷² Vİ • } NC

3. òJ , g OX() " í %&Ü U` I J òJ , O >f 3=.

!

òJ, O• * () r zipF targz<h <\$P () " òJ, g „ • m®Á² pO ~P3=.

Manager Patch

Manager Info † ûm#! ManagerP OX• þB §² &' , ManagerP OX \ μ- B >f g e R=.

k Üm §² –!] à@m ¢* WÒr ÞB⁻ . =.

Table 58. Manager Info à @

VW	I J	X)
Patch Status	ManagerP OX @T • þ ¥ • MNO : ManagerO é - OXB @T * (up to date) • þ ¥ ? ¿ MNO : ManagerO é - OXB @T &p q r (patch available) • þ	
Current Ver.	ManagerP —÷ ¢ j	
Patch Ver.	Patch ¢ j	
History	Patch historyB WX&! ¢ ⁻	Handwork • ò< () ² , vw(μ¶) [\ r å r £ I J §² 3=.

Manager Infok ÜP History à@m §² 3 vw(μ¶) [\ " €O&Ü k òI " GV OX >f <P" » Ag e R=.

k Üm §² –!] à@m ¢* WÒr ÞB⁻ . =.

Table 59. History à @

VW	I J	X)
Action	OX/μ" <P" §²	
Patch Ver.	OX/μ" " ef * OX() P ¢ j	
Pervious Ver.	OX/μ" " @T &M < i P # ¢ ¢ i	
Timestamp	OX/μ" " @T * ² ^	
Log/Handwork	vw(μ¶) [\ í %² >f ¬F J ¿ B CD* =. RE€(¬¹ °) [\ í %² Handwork(ÇO@I J () * e• ò) ãT" CD* =. Handwork • ò () ² Vĩ ¢ ⁻ r å r £ I J §² 3=.	

Patch

Manager Info &³ m R! Patch [\ " €O&Ü é- OXB @T * =.

Handworkm M©3 ãT OX>f Q () * e• ò< J , M©3 ãT" >f &z O† &z Ý * =.

Handwork • ò Q k òI &³ P HÈ â %B VC&Ü Manager Patch Infok ÜP Handwork Ç ¯ < O£I J Æ„ 3=.

Manager OXB @T&Ü Node¯ ServerP OX @T Q Commit [\ " Ì vM j Ép NodeP WX/aØ, ServerP WX/aØ/µC aP M• " ef g e Ÿ=.

!

OX Q O, ² ös • T 1² B NC&z Ý OXÇj P ManagerB STg e R=.

Restore

Manager Info &³ m R! Restore [\ " €O&Ü OX <j Çj I J µ- 3=.

µ- ! Managerm a Ø3 +, ^, P OX • þO Patch Available A „ • m ef * =.

Commit

Manager, Node, ServerP +, OXB @T Q CommitÇ ¯ " í ® » [* =. » [<Qm! <j Çj I J –² 2 e Ÿ=.

Node Patch

Node Patch Status † ûr áî Tm aØ3 nodem ¢V#, é- OXO @T3 #ÇP Õe¯ OXO @T–p qr #ÇP ÕeBª HV# > z ¨=.

k Üm §² –!] à@m ¢* WÒr ÞB¯ . =

Table 60. Node Patch Status à @

VW	I J	X)
Status	nodeP OX @T • þ ¥ • MNO : +, #ÇO é- OXB @T* (up to date) • þ ¥ ? ¸ MNO : Node AgentO é- OXB @T&p qr (patch available) • þ ¥ ¯ ? MNO : Node Agent! é- OXB @T&ØI °, Node m WX3 Serverm! é- OXO @T–p qr • þ ¥ » ¼½ MNO : Node agentO lena-manager¯ šf< –p q! • þ.	
Node name	nodeÒ	
Address	nodeP IP	
Node Version	NodeP —÷ Çj	
History	Patch historyB WX&! Ç ¯	Handwork • ò< ()², vw(µ¶) [\ r år £I J §² 3=.

VW	I J	X)
WAS	Web Application ServerP OX• p [> ¥ Up To Date : é - OXO @T 3 #ç P Õe ¥ Patch Available : é - OXO @T–p q r #ç P Õe	

Node Patch [\ " €O&Ü CD–! k òI m# Node í % Q Vİ Nodem ¢* OX | ! µ- B
Í f g e R=.

!

Window OS f „ m WX– 8 R! Node! ManagerO Þb CLIB GV OXB e f * =.

8.4.2. Application Server

Nodem 1 2 3 Application Serverm ¢V#, áî Tm òJ, 3 é- OX() J OXB Í f &h,
f C; <² OX @T > J | P • pJ µ" g e R! M• " CD* =.

WY

OXB @T g #ç B ¿ MŽ Wà (node³ N)I J – £ * =.

Table 61. Application Server Patch Status à @

VW	I J	X)
Patch Status	Application ServerP OX @T • p ¥ • MNO : é - OXO @T 3(up to date) • p ¥ ? ¿ MNO : é - OXB @T g e R! (patch available) • p	
Node	Application ServerO WX– 8 R! NodeÒ	
Name	Application Server < Y	
Type	Application #ç Ž E	
IP	Application ServerO WX3 NodeP IP	
HTTP Port	Application ServerP HTTP Connector port	
AJP Port	Application ServerP AJP Connector port	
Start/Stop	Application ServerP M` \ ¼p > f	
Current Ver.	Application ServerP —÷ WX3 ç i [>	

VW	I J	X)
PatchVer.	$OXB @Tg \zeta_i [> . \acute{e} - OXO @T 3 \bullet p) \\ , \bullet \text{N/AU} \S^2 3 = .$	$\acute{a}\hat{t} Tm \text{upload} 3 \acute{e} - \\ OX\zeta_i$
History	Serverm @T* patch/restoreP < P[> WX	



Node Agent process kill aP <åJ ` • < [• @<p q" „ • ! , Vİ nodeP Server [> ! WX–p q! =.

Patch

1. $OX@T \zeta_i \# \zeta P \frac{1}{4}p \bullet pB \gg A\&'$ (Start [\ z. k 3 • p), $\frac{1}{4}p \bullet pO \text{P} 3 \bullet$ Stop [\ " €O&z #ζB $\frac{1}{4}p^2 \tilde{a} =$.
2. $OXB @Tg \# \zeta P H\grave{E} \hat{a} \% B H\grave{E} * = . (\mu e H\grave{E} O \bullet)$
3. Patch [\ " €O&z $OXB \acute{I} f * = . < \grave{u} J \zeta k \grave{o} < 4d - h OX^a J Q e \bullet \grave{o} " \acute{I} f V\acute{Y} g S \grave{a} < R " „ \bullet$ Handwork i j m $RE \in (-^1 \circ) [\setminus < \grave{a} r \acute{e} I J \S M 3 =$.
4. $J \zeta k \grave{o} " | I \grave{U} \# \zeta P$ patch status • pO • MNO I J Æ„ – ' , current ver., patch ver.m!]] @T* –÷OXζi F N/AO $\S^2 3 =$.
5. Validation



- a. $\# \zeta O M ` \bullet p) \grave{u} ! OX @T O$
- b. $< 5 \acute{e} - OXO @T 3 \# \zeta m =^2 OXB @T O$



#ζm OX@T $\hat{2}$ Vİ Nodem OXB üĐ @Tg „ • , ãY@I J Vİ NodeP OXB ÜT Í f * Æm #ζ OXB Í f &d 3 =.

Restore

1. $\mu - @T \zeta_i \# \zeta P \frac{1}{4}p \bullet pB \gg A\&'$ (Start [\ z. k 3 • p), $\frac{1}{4}p \bullet pO \text{P} 3 \bullet$ Stop [\ " €O&z #ζB $\frac{1}{4}p^2 \tilde{a} =$.
 2. $\mu " " @Tg \# \zeta P H\grave{E} \hat{a} \% B H\grave{E} * = . (\mu e H\grave{E} O \bullet)$
 3. Restore [\ " €O&z $\mu - B \acute{I} f * = . < \grave{u} J \zeta k \grave{o} < 4d 3 =$.
 4. $J \zeta k \grave{o} " | I \grave{U} \# \zeta P$ patch status • pO ? , MNO I J Æ„ – ' , current ver., patch ver.m!]] < i ζi F OX() ζi < $\S^2 3 =$.
 5. Validation
- a. $\# \zeta O M ` \bullet p) \grave{u} \mu " " @T O$
 - b. $\mu " " * \text{Æm} , =^2 \mu " r O(\acute{a}\hat{t} T B G^* \mu " r 1^3 I i p " * =.)$



#ζm μ" Í f Q Nodem OXO @T3 #ζO &° t ÿ" „ • , ãY@I J Vİ NodeP μ" t 2Ó Í f * =.

N¾Š>

$vw(\mu \P) [\setminus " \in O\&z OX/\mu " m \P^* < P " O\acute{e} \acute{e} \ddot{A} P < PYZ 5\ddot{O} B WX^* =$.

Table 62. History à @

VW	I J	X)
Action	OX/μ" <P" §²	
Patch Ver.	OX/μ" " ef * OX() P ç i	
Previous Ver.	OX/μ" " @T&M < i P #çç i	
Timestamp	OX/μ" " @T * ² ^	
Log/Handwork	<div><div>vw(μ¶) [\ í %² >f ¬F J ¿ B CD* =.</div><div>RE€(¬¹ °) [\ í %² Handwork(ÇO@I J () * e • ò) ãT" CD* =. Handwork • ò () ² Vĩ ç ¯ r âr £I J §² 3=.</div></div>	

8.5. Preferences

8.5.1. Action Trace

ManagerB GV] STUO ef &! ÇO/e[/NC • òP ef <Pr J ¿ J Ò! =. Action
Tracem#! <®* ef <P" WX/Ç@&! M• " CD* =.

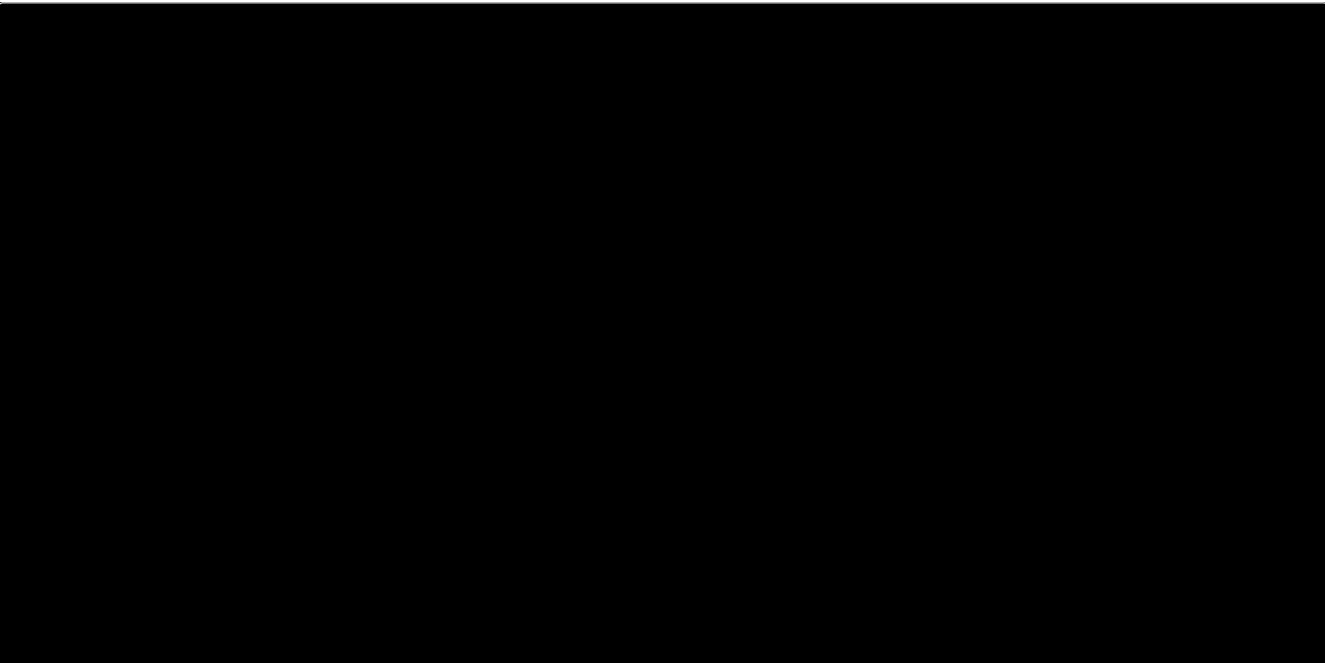


Figure 27. Action Trace k Ü

N¾ Š >
WX Wà" EPQ €O&Ü <P" WXg e R=, @Ø ¼ &° B í %&Ü • Ñ[> t » Ag e R=.
WX k Üm §M– ! à@r ÞB¯ . =.

Table 63. <P • Ñ [> à@

VW	I J	X)
Trace Date	Action" ef * 2 ^	
Status	Action ef -F	. D : Success, > O : Fail
Client IP	Action" ef * STUP IP E /	
User ID	Action" ef * STU ID	
Action	ef * z ` (Action) O	
Method	Actionm ST 3 Method < Y	
Request	LENA Manager Http Request URL	
Input	Http Request Input (s 5Z	

N à @ ¼ "Input" r Request (s 5Z B ç ¢J Tœ&M ù f m, Server ID, Node ID, Server Cluster ID ' < Z KLT Key] () { 8š, 56k Üm# "serverID=31"J §² 3 Y&)I J > z Í =. VÍ Server/Node/ClusterP • Ñ[> B WX&M NV#! "Action Trace Detail" [> &³ m R! "Search ID" M• " z T * =. < M• P E ~ P à @r Þ ß ~ . =.

Table 64. Search ID M• P E ~ P à @

VW	I J	X)
ID	¥ 56 Combo : serverId / nodeId ¼ %) ¥ • 6 : Input m R! ID] " E P	E P à @
Data	– £ 3 Server/Node [>	~ P à @

8.5.2. Documentation

LENA / ÖUJ - á Ââ" =...J , , " e R=.

8.5.3. Manager Environment

Manager f , W[" N* [> B CD* =.

Manager Environment

Manager f , W[[> ¼ env-manager.sh/batm Tœ&! [> B CD* =.

¥ Manager Allow IPs : Managerm ÃÄ O• * IPà@" W[* =.

¥ Java Home Path : Managerm# ST &! java home , J B W[* =.

Manager Configuration

Manager f , W[[> ¼ manager.confm Tœ&! [> B CD* =.

Mú@I J CD&! 2Op à@" CD* =.





¥ use Server Delete Protection : Managerm# #ç NC M• ST 7p z Y (default : false)

¥ use JMX for Server Status : JMXB GV #Ç • þ [> B WXgp z Y (default : false)

k Ü • 6P I] [\ " €O&Ü • Ñ [> B » A \ Æ„ g e R=.

!

Table 65. JMX for Server Status: true ST² WAS Status §²

Status	Status Ò	WÒ
	Started	WAS \ Application + É [• M` • þ
	Started(Warning)	WAS [• M` , Application) Y (! i H) M` · 3 • þ
	Stopped	WAS ¼p • þ
	Error	WAS Status » A O • þ

Metadata Refresh

Topology ÁÃm#² %½ ž - . [> B topology oÚJ ĸ LM NV ST–! ÁŽ' <ZP [H. –§
 \ μ" M• " ef* =.

Reset manager address of all registered nodes

Managerm a Ø3 ^ , 6md Æ„ 3 Manager AddressB) Õ@I J Æ„² 8Ë! M• " CD* =.

Chapter 9. Appendix

9.1. LENA • - @? ' V

LENAB WX&' ST&M N* é/) - Sarà =DF . =.

?¿	JVM	CPU	Memory	Disk	Support OS	X)
Mú WX OSp	JDK 1.8 <•	2 Core <•	4 GB <•	rootB C\$* TÎ 10GB <•	Linux (centos7 <•)	] - . ) / WX () CD

9.2. Manager cŒ ÀÁÿÂ

ManagerP M• " STg e R! ös•Tª: ! =DF . =.

IEP , •) YM• < [• @I J ` • &p qM ùfm =´ ös•TB ST&MB Åœ* =.

· Ã	[£	X)
Chrome	81	

9.3. Manager DBqr Ä€

ManagerP ãY' <Z KLB N* HSQL DBP () r ĚM@I J (1)) ~ò() " <. &' R=. <. NX! \${LENA_HOME}/etc./backup/lena-manager/script <=.

Mú@I J 30) <¡ ~ò[> ! NC&tØ -8 R! ' > KM^" Æ„ &' ¢r „ • , \${LENA_HOME}/conf • } &Nm manager.conf () " • ' , dbbackup.size=> KM^ " EP Q ManagerB ÷ M` &Ü > KM^" Æ„ g e R=.

9.4. Manager 7 ÅÆN¾ ` =

ManagerO ãY@I J ÒM! <Pr ĚM@I J NC&tØ %r 9ö< -8 R=. NC&! [> ! Action Trace <PF Server History <P<=.

Mú@I J Action Trace<Pr 30) Épi > K&' , Server History <Pr 90) Ép > K&' R=. < > KM^" Æ„ &' ¢r „ • \${LENA_HOME}/conf • } &Nm manager.conf () " • ' , actiontrace.size=> KM^ , serverhistory.size=> KM^ " EP Q ManagerB ÷ M` &Ü > KM^" Æ„ g e R=.

9.5. Manager 7 admin , -Ç© È; :

ManagerP adminSTU O%>, B &>&n° \$i 8š 9: ÅeO ?F&ø" „ • m! consoleB G&Z O%>, B ?MkVÝ * =.

1. ManagerO WX3 œ\$m console(telnet or ssh)J Ã« * =.
2. \$LENA_HOME/bin/reset_manager_pw.sh () " >f * =.

3. O%>, B ?Mk g userA admin" EP* =.
4. ?Mk g O%>, B EP* =. 3, O%>, ! 8UL<•, a(: /üU/Kef UP WHI J EP* =.
O%>, ! >· " NV consolem §² – p q! =.

```
[bi n]$ ./reset-manager-pw.sh

É*****
* LENA Server Install ! *
É*****

+-----+
--
| 1. USER_ID is the user id to reset
| ex : admin
| 2. NEW_PASSWORD is the password to change
| - password rule #1 : more than 8 length
| - password rule #2 : inclusion of one or more alphabet characters
| - password rule #3 : inclusion of one or more numerical digits
| - password rule #4 : inclusion of one or more special characters
+-----+
--

Input USER_ID for installation. (q: quit)
admini strator

Input NEW_PASSWORD for installation. (q: quit)

The password has been changed successfully.

Execution is completed.!!
```

9.6. LENA I É —O OSqÁÊ † (CentOS; K)

LENA WX ² OS(s 5Z! max user processes] " 8192 <• I J W[&! ý" Åœ* =.

parameter	—Oa	; ga
max user processes	8192	1024
open files	8192	1024

CentOSM¨ I J max user processes W[r =ÐF . < ùlimit Ðaŀ Òì 8B >f &z »A" g e R=.

```
$ ulimit -a +
core file size (blocks, -c) 0 +
data seg size (kbytes, -d) unlimited +
scheduling priority (nice, -e) 0 +
file size (blocks, -f) 8192 +
pending signals (-i) 14891 +
max locked memory (kbytes, -l) 64 +
max memory size (kbytes, -m) unlimited +
open files (-n) 1024 +
pipe size (512 bytes, -p) 8 +
POSIX message queues (bytes, -q) 819200 +
real-time priority (-r) 0 +
stack size (kbytes, -s) 10240 +
cpu time (seconds, -t) unlimited +
*max user processes (-u) 1024* +
virtual memory (kbytes, -v) unlimited +
file locks (-x) unlimited
```

CentOS 7 M` I J ` 8 ulimit Đu` ulimit ĐnŮ „ J Ń% e` 9; () ŌeB W[g e R=. N
 Æ„ Sà" † - @I J O† &M NV#!] åTP profile (.profile, .bash_profile)m ulimit >f Ōi "
 ÇO&n° , - C W[g e R= (CentOS M`).

```
*$ cat $HOME/.bash_profile*
```

```
*.. (<<)*
```

```
*ulimit -u 8192*
```

```
*ulimit -n 8192*
```

! =` W[Ńwl J! /etc/security/limits.conf (CentOS M`) () " • 8# „ J Ń% é ¢e(nproc)-
 9; () é ¢e(nofile)B W[* =.

```
*$ cat /etc/security/limits.conf*
```

```
*.. (<<)*
```

```
** soft nproc 8192*
```

```
** hard nproc 8192*
```

```
** soft nofile 8192*
```

```
** hard nofile 8192*
```

9.7. LENA B; ² È t Ì f z! q r

VW	Qt	` = B;	Í Î v Ì f Ì	X)
Manager[M~ – J «	LENA_HOME/repository/m onitoringDB/maintenance	6Ö=	10MB	#Ç 6Ç Mˆ P , • §OÎ Uˆ NC>
Manager+Î Z Ö, Í ³ L 1 Ú	LENA_HOME/repository/m onitoringDB/{yyyyMMdd}	7)	N/A	Uˆ NC
ManagerÍ ³ GI	LENA_HOME/repository/m onitoringDB/statistics	† -	1MB < &	>
ManagerDB~ ò ()	LENA_HOME/repository/b ackup/database	30)	100MB < &	Uˆ NC
ManagerJ Ğ	LENA_HOME/logs/lena- manager	30)	100MB < &	Uˆ NC
AgentJ Ğ	LENA_HOME/logs/lena- agent	30)	N/A	Uˆ NC
InstallerJ Ğ	LENA_HOME/logs/lena- installer	† -	1MB < &	>
Patch@T ()	LENA_HOME/etc/patch	† -	N/A	OX² mi < . / OXˆ J Q NCO•
Patch~ ò ()	LENA_HOME/etc/backup/l ena-patcher	† -	N/A	OX² mi < . / OXˆ J Q NCO•
PatchJ Ğ	LENA_HOME/logs/lena- patcher	† -	N/A	OX² mi < . / OXˆ J Q NCO•
#Ç A%×%J Ğ	#Ç A%×%WX„ J LENA_HOME/servers/serv er_id/logs	† -	Y&m Ôs ¿ ³	„ J Æ„ O•
#Ç A%×% Ð%uL	#Ç A%×%WX„ J LENA_HOME/servers/serv er_id/history	† -	N/A	ManagerB GV #Ç W[Æ„ ² m W[() Æ„ &i < .

9.8. About LENA

LENA CEF K{ &z ? 7* Sàr ÞBP , J B GV f PVĚ² M> @î =.

¥ Email: lens-support@lgcns.com

¥ Website: <https://soltech.lgcns.com/>

¥ Location: # A² - # - BB¼C8J 71 LGS<¿ %(È E13, E14