SuperMap iServer Cluster

SuperMap Software Co., Ltd.



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Main Contents

- Brief Introduction of Cluster
 - Functions of cluster
 - Classification of cluster
 - Structure of cluster
 - Roles in cluster and their responsibility
- Cluster Configuration

Notice: The iServer mentioned in the class are all for SuperMap iServer product if there is no special description.





- SuperMap iServer Cluster System
 - Cluster system is a transparent scalable GIS service system.
 - System provides GIS services to the client side externally, manage and assign the GIS services internally.



• Function of Cluster



- The control range of cluster service
 - Take the GIS server as unit to join/use the cluster, which means all the services in one server will join/use the cluster
 - Cluster service will find the best GIS service according to the requested map name



- Classification of Cluster
 - Multiple process cluster on single computer
 - Multiple level cluster
 - Multiple computer/Multiple application cluster



Multiple Process Cluster on Single Computer



Multi-thread on single machine – performance comparisons

Cluster performance improvement on single machine (100 user in concurrency)



Multiple Level Cluster



Multiple Level Cluster on Multiple Machines



Response time ratio for 50 user in concurrency



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The Operation Process of Cluster





- Responsibility of Roles
 - **Use Cluster Service**
 - Whether to get the cluster service
 - Cluster service address

Provide Cluster Service

- Whether to start service
- Listener information
- Cluster address
- Load balancing algorithm

Join Cluster

Report information to cluster



Settings for providing cluster service



- Settings for providing cluster service(selectable)
 - There is a cluster service on each GIS server, the default status is running.
- Open the iServer configuration file of cluster server
 - Location: [SuperMapiServerJava] \webapps\iserver\WEB-INF\iserver-system.xml
 - Configuration information:



Configuration parameter:

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Node name	Description
<clusterservice></clusterservice>	The configuration root node of cluster service.
<pre><enabled> (child node of <clusterservice>)</clusterservice></enabled></pre>	Indicator if the cluster service available, if it is false, then cluster service is not available, if it is true, cluster service can be activated.
<balancer></balancer>	The node is used to set which loading balance algorithm to calculate GIS server loading in cluster service.
<monitorperiod></monitorperiod>	Time interval of monitoring sub-node in cluster service, unit is millisecond.



Cluster service address

http://[IP of cluster server or server name]:[iServer service port of cluster server]/iserver/services/cluster

http://192.168.1.1:8090/iserver/services/cluster



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Configuration for using cluster service



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• Configuration for using cluster service

me	Services	Cluster	s Log	s Security	Monitoring	Backup	Task	License	Settings	supermap + I
Ch	uster Overtie	w Use	Cluster	Configure Clus	ster Join Cluste	er Distrib	uted Tiles	Distribut	ed Tiles Repository	
Ye Pl	ou can improv lease refer to	ve the GI Cluster.	S service p	erformance and o	capacity of this co	mputer by	using cluste	r. The cluste	er system will provide the	high performance service for the client.
N	lotes: Before u	using a cl	uster, you	should build a cl	uster.					
7	Enable the clu	uster								
	Ose local c (default)	luster se	vice							
(Use other	cluster se	rvice							
	Cluster se	ervice	http://lo	calhost:8090/iser	ver/services/clus	ter		Toker	n:	
	URL: *		Show(service.)	Token needs to b	e input here if a s	ecurity Tok	en has been	set for the	cluster	
A	Advanced									
,			Sa	ave Can	cel					





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Configuration for GIS server node

 Add reporter, input the cluster service address

luster Overt	iew Use Clus	ster Co	nfigure Cluste	er Join Cluster	r Distribu	ited Tiles	Distribute	ed Tiles Repository		
Any iServer ca Cluster Serve	an be used as a Address: http:/	cluster se	erver to accept port>/iserver/	child nodes. Whe 'services/cluster	en a child no	ode joins in	the cluster,	it needs to report to the	e cluster se	rver addre
Report to the	cluster service I	by adding	g a reporter. Yo	ou can add the loo	cal compute	er to the clu	usters.			
Report to the Notes: 1. If the clus 2. When the	cluster service l ter server opens cluster server h	by adding s security nas alread	g a reporter. Yo control, the ch ly set the secur	bu can add the loo nild node is valid rity token, it need	cal compute only when t Is to add To	er to the clu the cluster s ken inform	usters. server "Allov ation to the	v". report.		
Report to the Notes: 1. If the clus 2. When the Join Cluster Add report	cluster service l ter server opens cluster server h ter (Reporting to	by adding s security nas alread o cluster	g a reporter. Yo control, the ch ly set the secur service means	bu can add the loo hild node is valid o rity token, it need to join the cluster	cal compute only when t ls to add Tol r)	er to the clu the cluster s ken inform	usters. server "Allow ation to the	v". report.		



• Browse the cluster member list

Cluster Overtiew	Use Cluster	Configure Cluster	Join Cluster	Distributed Tiles	Tiles Repository
Security Control					
Join: E	nable (When en	able the security, it need	ls to click the Enab	ble button.)	
Check service list o	f cluster main nod	e			
Agent list					
Ordinary member	rs				
• http://192.168.52.	.40:8091/iserver/se	ervices View Details			
Controlled memb	oers				



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Practice: Multiple Process Cluster on Single Computer



Practice

- Multiple Process Cluster on Single Computer
 - Modify the ports to avoid port conflicts among several servers
 - Method 1: Copy iServer directory and modify iServer port
 - Port modified location: [iServer directory] \conf\server.xml
 - <Server port="8015" shutdown="SHUTDOWN">
 - <Connector port="8090"</pre>
 - protocol="org.apache.coyote.http11.Http11NioProtocol"
 - connectionTimeout="20000"
 - redirectPort="8453"
 - executor="tomcatThreadPool"
 - enableLookups="false"
 - URIEncoding="utf-8"

/>

 Method 2: war package + iServer installation package (or iServer zip package)





Security Control of Cluster Service

- The cluster service controls the GIS service nodes which will join the cluster system
- Security control methods
 - Cluster service—Turn on the control switch and set the security Token

——Control the members in the member

list

GIS server added to the cluster——Input the secure Token when adding reporter



Security Control of Cluster Service

- Security control operation:
 - Cluster service operation

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uster Overtiew	Use Cluster	Configure Cluster	Join Cluster	Distributed Tiles	Distributed Tiles Repository	
Security Contro	J					
Join: Security Token :	Disable (Whe	en enable the security, Change	it needs to click	the Enable button.) en setting Token, Tok	en information should be added to the report.	.)
Check service list	of cluster mair	n node Set	Token			
Agent list				(Control the GIS	
Ordinary memb	pers				joining cluster	
Controlled men	nbers					
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Security Control of Cluster Service

Security control operation:

- Operation of join GIS server node

Cluster Overtiew	Use Cluster	Configure Clu	Join Cluster	Distributed Tiles	Tiles Repository Input t	he
Any iServer can be us	sed as a cluste	Edit reporter			cluste	r x iddr
Cluster Server Addre	ss:nttp:// <ip></ip>				service I	oken
Report to the cluster	service by adc	Report address:	http://localhost:809	0/iserver/services/clus	iter	
Notes:		Security token:	0			
1. If the cluster serv	/er opens secu					
2. When the cluster	r server has alre				ОК	Cancel
Join Cluster						

 Cluster service address
 Security token
 Enable tile node
 Enable reporter

 http://anotherclusterservice:8090/iserver/services/cluster
 Image: Cluster service address in the service a

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Cancel

Save



Controlled Cluster

- The child node could be controlled to join the cluster
- Service instance and data from parent node will be synchronous to the child node
- Child node will be controlled by parent node completely, its original service instances and service manager will be forbidden
- Principle
 - Cluster will copy all the data from parent node to \data folder of all child node
 - Child node will create a new configuration file: iserver-servicesinterfaces-controller.xml
 - The old configuration file iserver-services-interfaces.xml will be forbidden
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Controlled Cluster

- Steps:
 - Step 1: shut down iServer server of sub node
 - Step 2: Open the installation directory \webapps\iserver\WEB-INF\iserver-system.xml, modify the code as following:

	<clustering></clustering>
	<reporters></reporters>
	<reporter></reporter>
	<cluster></cluster>
	<clusterservice></clusterservice>
	<' 以受控方式加入集群的配置方法>
	<controllable></controllable>
	<address><u>http://localhost:8090/iserver/services/cluster</u></address>
	<enabled>true</enabled>
	<token></token>
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Controlled Cluster

• Steps:

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- Step 3: Restart the child node server
- Step 4: Verify whether there are controlled members on the cluster server

集群概览	使用集群	配置集群	加入集群	分布式切图	切片存储库			
安全控制								
受控加入	开启	(当开启安全控制	町,需要点击	"允许"使子节点	注效。)			
查看集群主	节点服务实例列	表						
Agent列表								
普通成员列	表							
• http://192.	168.169.17:809	0/iserver/servic	es 查看服务	计情				
受控成员列	康							
ohttp://1	127.0.0.1:8091/	iserver/services	 受控节点 	服务实例部署成功:	36 , 失败 : 0 , 总共	ŧ:36 2013-09	-05 15:41:16	





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