解决方案实践

# 快速部署高可用 MHA-MySQL 集群

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## 漏洞处理流程

华为公司对产品漏洞管理的规定以"漏洞处理流程"为准,该流程的详细内容请参见如下网址: https://www.huawei.com/cn/psirt/vul-response-process 如企业客户须获取漏洞信息,请参见如下网址: https://securitybulletin.huawei.com/enterprise/cn/security-advisory



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## 应用场景

该解决方案基于开源软件MHA构建,快速帮助用户在华为云云服务器上完成高可用的 MySQL集群部署。MHA是一款成熟且开源的MySQL高可用程序,主要提供心跳检 测、主从复制、故障转移,并发送告警邮件。适用于需要高可用性、数据完整性以及 近乎不间断的主服务器维护等场景。

## 方案架构

该解决方案能够快速帮助您在华为云上搭建基于开源MHA的MySQL集群环境,部署架构如下图所示:

#### **图 1-1** 方案架构



该解决方案会部署如下资源:

创建3台华为云Flexus云服务器X实例,加入同一个云服务器组,配置反亲和策略,跨可用区部署,并分别安装MHA和MySQL软件。

- 创建1个虚拟IP(VIP),用于MySQL数据库主从切换。
- 创建3条弹性公网IP,用于MHA和MySQL环境部署及后期发生故障后发送报警邮件。
- 创建安全组,可以保护云服务器的网络安全,通过配置安全组规则,限定云服务器的访问端口。

## 方案优势

- 高可靠
   云服务器配置反亲和性策略,跨可用区部署,提供多可用区容灾能力;安装MHA 故障切换和主从复制的软件,能够快速自动完成故障切换以及很大程度上保证数 据一致性。
  - 节约成本
     MHA 由 MHA Manager 和 MHA Node 组成, MHA管理器部署在其中一台从数据库服务器上,因此不需要额外的服务器。
- 一键部署
   一键轻松部署,即可完成资源的快速发放以及高可用MySQL集群环境的部署。

## 约束与限制

- 在开始解决方案部署之前,请确认您已经拥有一个可以访问该区域的华为账号且 已开通华为云。
- 如果选择计费模式选择"包年包月",请确保账户余额充足以便一键部署资源的 时候可以自动支付;或者在一键部署的过程进入费用中心,找到"待支付订单" 手动完成支付。
- 请确保你有一个可以通过SMTP方式发送邮件的邮箱账户。
- 目前仅亚太-曼谷区域支持华为云Flexus云服务器X实例一键部署。



该解决方案主要部署如下资源,不同产品的花费仅供参考,具体请参考华为云<mark>官网价</mark> 格,实际以收费账单为准:

表 2-1 资源和成本规划(按需计费)

华为云服务	配置示例	每月预估花费
华为云Flexus云服 务器X实例	<ul> <li>按需计费: \$0.08 USD/小时</li> <li>区域: 亚太-曼谷</li> <li>规格: Flexus云服务器X实例   性 能模式(关闭)   x1.2u.4g   2核   4 GB</li> <li>镜像: CentOS 7.6 64bit</li> <li>系统盘: 高IO   40GB</li> <li>数据盘: 通用SSD   100GB</li> </ul>	\$181.44 USD
弹性公网IP EIP	<ul> <li>购买量:3</li> <li>按需计费:\$0.11USD/GB</li> <li>区域:亚太-曼谷</li> <li>线路:动态BGP</li> <li>公网带宽:按流量计费</li> <li>购买量:3(配置完成后可手动释放2个,将不再计费)</li> </ul>	\$0.11USD/GB
合计	-	\$181.44 USD + 公网 流量费用

#### 表 2-2 资源和成本规划(包年包月)

华为云服务	配置示例	每月预估花费
华为云Flexus云服	● 区域:亚太-曼谷	\$47.73 USD
务器X头例	<ul> <li>规格: Flexus云服务器X实例   性 能模式(关闭)   x1.2u.4g   2核   4 GB</li> </ul>	
	● 镜像: CentOS 7.6 64bit	
	● 系统盘:高IO   40GB	
	● 数据盘:通用SSD   100GB	
	● 购买量:3	
弹性公网IP EIP	● 按需计费: \$0.11USD/GB	\$0.11USD/GB
	● 区域:亚太-曼谷	
	● 线路: 动态BGP	
	<ul> <li>公网带宽:按流量计费</li> </ul>	
	<ul> <li>购买量:3(配置完成后可手动释 放2个,将不再计费)</li> </ul>	
合计	-	\$47.73 USD + 公网流 量费用



- 3.1 准备工作3.2 快速部署3.3 开始使用
- 3.4 快速卸载

# 3.1 准备工作

## 创建 rf\_admin\_trust 委托

**步骤1** 进入华为云官网,打开<mark>控制台管理</mark>界面,鼠标移动至个人账号处,打开"统一身份认证"菜单。

图 3-1 控制台管理界面



图 3-2 统一身份认证菜单

简体中对	ż	ESMESMESMES HUBBER	
基本	恴息	已实名认证	8
安全	设置		ŀ
引 我的	凭证		
统一	身份认证		
切换	角色		ŀ
<sup>2</sup> 标签	管理		
操作	日志		ŀ
2		退出	

## **图 3-3** 委托列表

统一身份认证服务	委托	6 10						的制度行
用户		删除 影还可以影遣10个美托。				全部英型 👻	rf_admin_trust	X Q
用产组		要托各称ID 1Ξ	要托动象 1Ξ	要托姆长 ↓Ξ	创建时间 4F	描述 1三	操作	
权限管理 ▼		rt_admin_trust	奋通帐号 op_svc_IAC	永久	2022/04/19 19:57:31 GMT+08:00	Created by RF, Not delete.	授权 修改 勤除	
委托								

- 如果委托存在,则不用执行接下来的创建委托的步骤
- 如果委托不存在时执行接下来的步骤创建委托

步骤3 单击步骤2界面中右上角的"创建委托"按钮,在委托名称中输入

"rf\_admin\_trust","委托类型"选择"云服务"。"委托的账号"选择"RFS", 单击"下一步"。

步骤2 进入"委托"菜单,搜索"rf\_admin\_trust"委托。

#### **图 3-4** 创建委托

	委托 / <b>创建委托</b>		
	* 委托名称	rf_admin_trust	
	* 委托类型	<ul> <li>普通帐号</li> <li>将帐号内资源的操作权限委托给其他华为云帐号。</li> <li>云服务</li> <li>将帐号内资源的操作权限委托给华为云服务。</li> </ul>	
	* 云服务	RFS •	
	* 持续时间	রুঠ ▲	
	描述	请输入委托信息。	
		0/255	
•		下一步取消	

步骤4 在搜索框中输入"Tenant Administrator"权限,并勾选搜索结果。

#### **图 3-5** 选择策略

<b>()</b> 2756 —	② 定题最小规模汇版图 (3) 地域								回到日版
委托"rf_admir	」bust2"将拥有所愿意略							87i3	國略
查看已迭(	1) 从其他区域项目契制权项		全部类型	×	所有云服务	٠	Tenant Administrator	×	Q
	翁称	类型							
<b>•</b> •	Tenant Administrator 全部元振的管理员(BI-MAT管理历界)	系统角色							

**步骤5**选择"所有资源",并单击下一步完成配置。

#### 图 3-6 设置授权范围

() 25% Ref	田利日版
◎ 有量出意的符合時的意味。其他書寫以下發行包裹方案、更是子包書→以供行、可是行合時、7%回公司有量的時合書的時代包裹方案	×
透明板位置が含	
● 所有受選 用代氏, MM用户可以依据的预度用标等中所有世界, 包括企业项目, 已成项目和全角局资源。	
展开其他力當	

## 步骤6 "委托"列表中出现 "rf\_admin\_trust" 委托则创建成功。

#### **图 3-7** 委托列表

统一身份认证服务	委托(	D						ensilasire
用户		部除 您还可以创建37个委托。				全部與型	<ul> <li>rf_admin_trust</li> </ul>	X Q
用戶盤		● 要托名称ID JE	要托对象 4Ξ	奥托朗长 100	创建时间 15	描述 1Ξ	操作	
权限管理 ▼ 项目		rf_admin_trust	普通账号 op_svc_IAC	# <b>A</b>	2023/01/16 17:57:41 GMT+08:00	Created by RF, Not delete.	1942   1932   1959	
最份提供商								
安全设置								

----结束

## 获取邮箱授权码

当MHA进行failover或由于错误停止时,可以使用send\_report脚本以邮件报警的方式 来获得failover报告,从而使得用户可以及时了解现在的数据库状态。该解决方案部署 的MHA需要通过SMTP方式发送邮件,则需要打开邮箱SMTP服务,且现在邮箱大多为 邮箱客户端设置了独立密码或授权码(即通过Smtp方式发送邮件密码处不是填邮箱登 录密码,而是要填授权码)。此处以outlook邮箱为示例,获取您部署MHA时发送邮 件账户的授权码。

步骤1 登录邮箱。单击右上角"设置"图标,单击"查看全部Outlook设置"。

#### **图 3-8** 设置

见在开	순 🔇	ŧ	Þ	ţζ.	Ŷ	6
×	<b>设置</b>	Outloo	ok 设置			;
	开始使用	-				$\sim$
	土設 () () () () () () () () () () () () ()	元同	fil.fit.			
	深色模式 使用系 ○ 使用系 ○ 深色 ③ 浅色	① \$统设置				
	重点收件和 桌面通知	<b>i</b> ()				
	显示密度					
	查看全部	Outlool	(设置	89		

**步骤2** 在弹框后单击左侧"同步电子邮件",勾选下图所示选项,"允许应用和设备删除来自 Outlook的邮件"如果不需要在其它应用删除邮件可不选。

#### **图 3-9** 同步电子邮件

设置	布局	同步电子邮件 人名法格尔 人名法格尔人名 人名法格尔人名 人名法格尔人名 人名法格尔人名 人名法格尔人名 人名人名人名人名人名人名人名人名人名人名人名人名人名人名人名人名人名人名
▶ 搜索设置	撰写和答复	POP和IMAP
⑦ 常规	附件	POP 选项
≥ 邮件	HUU]	允许设备和应用使用 POP
□□ 日历 	整理 垃圾电子邮件	
	自定义操作	〇 中 使用 POP 的设备和应用可设置为在下载后删除来自 Outlook 的邮件。
巨制式逐次直	同步电子邮件	○ 不允许设备和应用删除来目 Outlook 的邮件。 它会将邮件移动图特殊的 POP 文件来。
	邮件处理	● が许应用和设备删除来自 Outlook 的邮件
	转发	LLJ POP 设置
	自动答复	服务器名称: outlook.office365.com 端口: 995 加密方法: TLS
		IMAP 设置
		服务器名称.outlook.office365.com 端口:993 加密方法 TLS
		SMTP 设置
		服务器名称: smtp office365.com 端口: S87 加密方法: STARTTLS

步骤3 在右上角单击头像,单击"我的个人资料"。

**图 3-10** 我的个人资料

口:现在?	∓ <b>会 </b> S	EL E	t.	()) }	Ŷ	ŶX
	Micros	oft				注销
記定 🕒 推進						
	( YX	9	我的 Mid	<u>rosoft </u>	<u>KP</u>	
			我的个人	资料		
	名 <sub>+</sub> ) 使	可用其他帐	户登录			

**步骤4**你的个人资料页面会出现如下图所示,单击"安全",带页面刷新成功后,单击"立即开始"。

#### **图 3-11** 安全

₩ Microsoft 靴户   你的信息 隐私 安全 付款和计费 >>	服务和订阅 设备		
安全 安全性基础知识			夕 更改整研 上次更新: 2023/3/8
			•
<b>登录活动</b> 诸查查查录时闻和地点,如果发现异常,诸许知 我们。	<b>黎码安全</b> 使用周期间调制,更好也很许够产安全。	高级安全选项 清音试想用最新安全协切以用中核产安全。	使用 Windows 10 编保安全 (徽) Window 10, 可题记忆她用 Microtoft Defender 教师听说的新说完全。
查看我的活动	更改我的密码	"立即开始"	查看 Windows 安全中心

**步骤5** 系统验证通过后,开启双重验证。单击双重验证下方的"管理",按照系统提示步骤 完成操作,并开启双重验证。

**图 3-12** 开启双重验证

 Microsoft 帐户 / 你的信息	隐私	安全	Rewards	付款和计费 ~	服务和订阅	设备	
安全性						<mark>- 現式総相</mark> 東式総相 上次更新時间 2023/3/8 <b>東衣 &gt;</b>	●23 双重換証 并层 普通 >

步骤6 成功开启后,双重验证状态显示"开启"。

#### 图 3-13 双重验证

安	全性				更改密码 上次更新时间 更改 >	]: 2023 <b>/3/8</b>		<b>℃</b> 双重验证 开启 管理 >	
<b>证明侦</b> 管理 M	<b>的身份的方法</b> icrosoft 帐户的登录和	应证方法。详细了 <u>解受</u> 录;	印验证。						
~	🚥 输入密码							❷ 最新	
	上次更改时间 更改密码	2023/3/8 查看活动				用于	帐户登录		
>	▶ 通过电子邮件发	送代码						⊘ 最新	
>	▶ 通过电子邮件发	送代码						❷ 最新	
	⑦ 添加一种新的量	经最或验证方法							
<b>其他安</b> 要提高	<b>全选项</b> 账户的安全性,请删除8	8日或要求执行两个步骤;	才能登录。						
	<b>无密码帐户</b> 关闭 × 开启			ବ୍ୟ	<b>双重验证</b> 开启 关闭				

**步骤7** 执行后下拉可以看见"应用密码"选项,此处可以创建应用密码,即三方应用连接时的密码。

#### **图 3-14** 应用密码

要提高帐户的	~ 安全性,请删除密码或要求执行两个步骤才能登录。		
•••• X	<b>无密码帐户</b> 关闭 开启	ବ୍ର	<b>双重验正</b> 开启 关闭
了解有关删除	密码的详细信息		
详细了解双重	验证		
删除现有的应	四 用密码		
将我注销			
如果你认为某细了解如何注	个人可能对你的帐户进行未经授权的访问,我们可以通过从受 销。	信仕的设备》	研究王销来为你提供保护。你将在24小时内从使用你的帐户登录
将我注销			
恢复代码			
如果你无法访	问登录信息,可以使用此代码访问你的帐户。请打印此项,并	将其保存在多	安全的位置或为其拍照。

步骤8 获取授权码,填入参数 "email\_authorization\_code"中。

图 3-15	获取授权码	

Microsoft 帐户	你的信息	隐私	安全	Rewards	付款和计费 ~	服务和订阅	设备
使用此	应用密	邵码登	₹录				
在不接受安全什	记码的应用或设	备的密码	字段中输入	、下面的应用	密码。如果你不知道	首如何使用应用。	密码更新你的应用或设备,请遵循这些
应用蜜码 e	ıl						
对于不接受安全 创建其他应用图	≥代码的应用或 §码	战备,你	需要为其仓	测建新的应用	密码。		
完成							

----结束

## 3.2 快速部署

本章节主要帮助用户快速部署该解决方案。

#### 表 3-1 参数填写说明

参数名称	类型	是否 必填	参数解释	默认值
vpc_name	string	必填	虚拟私有云名称,该模板使用 新建VPC,不支持重名。取值 范围:1-54个字符,支持数 字、字母、中文、_(下划 线)、-(中划线)、.(点)。	highly- available- mha- mysql- cluster- demo
security_group_ name	string	必填	安全组名称,该模板使用新建 安全组。取值范围:1-64个字 符,支持数字、字母、中文、 _(下划线)、-(中划线 )、. ( 点 )。	highly- available- mha- mysql- cluster- demo
ecs_name	string	必填	云服务器名称,不支持重名。 取值范围:1-57个字符,支持 小写字母、数字、_(下划 线)、-(中划线)。	highly- available- mha- mysql- cluster- demo
ecs_flavor	string	必填	云服务器实例规格,支持弹性 云服务器 ECS及华为云Flexus 云服务器X实例。Flexus 云服 务器X实例规格ID命名规则为 x1.?u.?g,例如2vCPUs4GiB规 格ID为x1.2u.4g,具体华为云 Flexus 云服务器X实例规格请 参考控制台。弹性云服务器规 格具体请参考官网弹性云服务 器规格清单。	x1.2u.4g
ecs_password	string	必填	云服务器、MySQL复制账户及 MHA管理账户初始化密码。取 值范围:长度为8-26个字符, 密码至少包含大写字母、小写 字母、数字和特殊字符(\$!@ %=+[]:./^,{}?)中的三种,密 码不能包含用户名或用户名的 逆序。云服务器管理员账户默 认root,MySQL主从复制账户 默认repl,MHA管理账户默认 mha。	空
system_disk_siz e	number	必填	云服务器系统盘大小,默认高 IO型,不支持缩盘。取值范 围:40-1,024GB。	40

参数名称	类型	是否 必填	参数解释	默认值
data_disk_size	number	必填	云服务器数据盘大小,默认通 用SSD型,取值范围: 10-32,768GB。	100
sender_email_a ddress	string	必填	发件人邮箱地址,用于MHA故 障转移发送报警邮件。例如: mha@huawei.com。	空
recipient_email_ address	string	必填	收件人邮箱地址,用于接收报 警邮件,例如: recipent@huawei.com。	空
email_authoriza tion_code	string	必填	邮箱账户授权码,用于授权 MHA使用发件人邮箱账户发送 邮件,获取请参考3.1 <mark>准备工</mark> 作。	空
smtp_server_ad dress	string	必填	发件人邮箱SMTP服务器地址, 例如Outlook邮箱SMTP地址为 smtp.office365.com。有些邮 箱可能默认不开通SMTP发送邮 件,需要提前设置。	空
charging_mode	string	必填	计费模式,默认自动扣费,可 选值为:postPaid(按需计 费)、prePaid(包年包月)。	postPaid
charge_period_ unit	string	必填	订购周期类型,仅当 charge_mode为prePaid(包 年/包月)生效。取值范围: month(月),year(年)。	month
charge_period	number	必填	订购周期,仅当charge_mode 为prePaid(包年/包月)生 效。取值范围: charge_period_unit=month (周期类型为月)时,取值为 1-9; charge_period_unit=year(周 期类型为年)时,取值为1-3。	1

# **步骤1** 登录华为云解决方案实践,选择"快速部署高可用MHA-MySQL集群",跳转至该解决方案一键部署界面,数据中心下拉菜单可以选择需要部署的区域。

#### 图 3-16 解决方案实施库

#### 方案架构

该解决方案能够快速帮助您在华为云上搭建基于开源MHA的Mysq(集群环境。	
意び話。有云(VPO) デ府 MHA Manager盜所 安全祖	快速部署高可用MHA-MySQL集群 版本:11.0 上次更新日期:2024年7月 来源:由华为云构建 部署:预计15分钟 即载:预计10分钟 預估成本、 查看源代码、
可用版1 可用版2 「可用版2 「「用版3 「 MySQL数据库(从) 」 MySQL数据库(从)	数据中心: 亚太-曼谷 • <u>查看部寄指</u> 常 —健部署

**步骤2** 单击"一键部署",跳转至该解决方案创建资源栈部署界面。

#### 图 3-17 创建资源栈

1 选择模板 ———	- (2) RE##\$\$ (3) HE#\$\$\$ (4) RE#\$\$
* 创建的元	已的现在在可说化如果就会就
* 模板来源	私等機械 URL 上作機械
	每个资源结婚是基于根据创造的,根据中心须要有 部署代码公共(3° 器名为inflant json)。
* 欄板 URL	https://documentation-samples-6-obs-ap-southeast-2
	组织的型少增要将器带(G)文件,文件不能超过148。
	⑦ 透露轉串股系不会在管理設置之外的場果使用空上体的範圍、我们不会对空的機能进行加速、对于參数中的動脈範圍、推荐使用AdsabzEWF接触目行加速、目前控制在中支持自动使用Adsbbz空的物態參数。

步骤3 单击"下一步",参考表3-1完成自定义参数填写。

#### **图 3-18** 参数配置

* 80%556 deploy-a-highly-evaluatio-entra-mysq-cluster					
组织转给用以中交运用交升油。当时中文、大小写用文、前开、下银丝、中和彩、120个中司之内。 <b>也对转在将不能量名。</b>					
描述快速部	開同 <b>川HAMySOL集第</b> 18255				
2 <b>置参数</b> 新始入关键子搜索参数容 叠数23路	<ul> <li>۲. Толевичение О</li> <li>۲. Толевичение О</li> <li>۲. Толевичение О</li> <li>۲. Толевичение О</li> <li>1. Толевичение О</li></ul>	英型			
<b>置参数</b> NeA入关键分技数参数名 <b>B数名称</b> rpc_name	Q     G     Instance of the myself-cluster-domo	类型 string	編述 曲別私有云名称,GMB的使用物理VPC,不支持量名,取编馆面:1-541字符,支持数字,字句,(下名35)、-(中2681)、(点		
置参数 Mac入ス値が換定参数名 参数名称 App_name security_group_name		类型 String string	編述 曲拟私有云色称,编辑规想有解理VPC,不当持量名,取值记题:1-54个学符,支持数字,学母、 (下2016)、-(中位18)、(点… 安全组名称,编辑规想有新建学会说,安全组现则操参考密播加度由行意题,取值记题:1-54个学符,支持数字、学母、、(下2016		
留参数 部会入共計学技会参数 整数名称 wpc_name security_group_name ecs_name		类型 string string	編述 虚拟体育云名称、這種物理可能識小PC、不法特量名、取識定面: 1.541字符,支持数字、字母、_(下記法)、・(中記法)、、(点 安全地名称、這種物理用物識会全组、安全地球別導き中部物面或出行宽置、取儀定面: 1.641字符,支持数字、字母、_(下記法) 云能労働系称,不支持重点、取成范围: 1.571字符、支持小写学母、版学、_(下記法)、、・(中記法)、既以Angny availableA		

**步骤4** 在资源设置界面中,"权限委托"下拉框中选择"rf\_admin\_trust"委托,单击"下一步"。

图 3-19	资源栈设置
--------	-------

<   立即创建资源	ła do statu i na statu	ſ
<ol> <li>(1) ISI\$4016</li> </ol>	- () EIRE () EIRA	
* 10月晚托	Namesbod         If Johns, Just         D           DEFECTED/FETERELS/NERGELS/NERGELS/NE/DEFECTED         NERGEN/NERGELS/NERGENS/NERGELS/NERGELS/NERGELS/NERGELS/NERGELS/NERGENS/NERGELS/NERGENS/N	
田田没置	7. 开始回席单示最作为效时, 会自动间点至至新统州保存的上一个运动的资源转移。 他還有可在资源转降低回期存在。	
影除保护		
		6
		ð
	Contraction of the second s	9 2
	1-9 T-9	

步骤5 在配置确认界面中,单击"创建执行计划"。

#### **图 3-20** 确认配置

	🕑 XIRIQE 👍 Alema	λ							
前期期時期時度用於原,但前期時代的前期可能期間可能期間可能期間可能用的時,它可通过全國政府計划(先用)后時期就法用用.									
选择模板									
资源地名称	deploy-a-highly-available-mha-mysql-cluster		I而达 权继定的图荷可用MHA-MySQL编程						
配置参数 🖉									
参数名称	他	类型	描述						
vpc_name	highly-available-mha-mysql-cluster-demo	string	虚拟私有云名称,该模板使用铜罐VPC,不支持重名。取偷范围:1-54个字符,支持数字、字母、(下划线)、-(中划线)、-(州)。默认highiy						
security_group_name	highly-available-mha-mysql-cluster-demo	string	安全组合称,该概版使用新建安全组,安全组织防清参考部署施始进行配置,取值范围:1-64个字符,支持数字、字母、_(下划线)、-(中划线)						
ecs_name	highly-available-mha-mysql-cluster-demo	string	云振势器合称,不支持垂名。取值范围:1-57个字符,支持小写字母、数字、_ (下划线)、-(中划线)。 默认highly-available-MHA-MySQL-du						
ecs_flavor	x1.2u.4g	string	云服务罐实例规格,支持制性云服务罐 ECS及华为云Flexus 云服务罐X实例,Flexus 云服务罐X实例规构印命合规则为x1.?u.?g,例如2VCPUs4						
ecs_password		string	云振务器初始化忠码,创建完成后,请参考部署指确及时重置密码。取重范围:长度为8-26个字符,密码至少包含大写字母、小写字母、数字和						
system_disk_size	40	number	云服务器系统盘大小,默认高IO型,不支持m盘。取值范围:40-1,024GB,默认40GB。						
			-Martinetta I I DAINTANNTI Televite a sesse Ballanen						
8用预估: 创建执行计划 (免费) 后可获取	预估费用		上一步						

步骤6 在弹出的创建执行计划框中,自定义填写执行计划名称,单击"确定"。

 $\times$ 

**图 3-21** 创建执行计划

<ul> <li>              在部署资源栈:                  检查各项配置                  。该创建免费,</li></ul>	之前,您可以通过创建执行计划提前浏览您准备部署的资源栈信息、 以此评估对正在运行资源的影响。 <b>旦会占用资源栈配额。</b> 创建后会生成一个未开通资源的资源栈,并在 导示预计费用.
* 执行计划名称	executionPlan_20230216_1745_pqtk
描述	请输入对执行计划的描述
	0/25
	确定取消

- 步骤7 单击"部署"并在弹出的执行计划确认框中单击"执行",等待资源部署。
  - **图 3-22** 部署执行计划

deploy-a-highly-available					部除 更新模板或参数 C
基本信息 资源 输出 事件	模板 执行计划				
\$P.B				请输入关键字	QC
执行计划名称10	<del>8</del> 65	奏用预估 ①	创建时间	描述	操作
<ul> <li>executionPlan_20230216_1745_pttk</li> <li>1548bd9d-2540-4e4d-99e9-8ld5f0eedb55</li> </ul>	创建成功,特部署	查看與用奶细	2023/02/16 17:46:07 GMT+08:00	-	<b>影吟</b> \$58

- **步骤8** (可选)如果计费模式选择"包年包月",在余额不充足的情况下(所需总费用请参考表2-2)请及时登录费用中心,手动完成待支付订单的费用支付。
- **步骤9** 待 "事件"中出现 "Apply required resource success",表示该解决方案已经部署完成。

#### **图 3-23** 资源创建成功

( deploy-a-highly-available 基本信息 资源 输出 ———————————————————————————————————	件 模板 执行计划			制体 更新領板成本数 C
				· 清编入关键字
神体时间 1Ξ	事件类型	事件描述	资源名称/类型	关联资源ID
2023/02/16 17:52:35 GMT+08:00	LOG	Apply required resource success.	-	-
2023/02/16 17:52:28 GMT+08:00	-	Apply completel Resources: 14 added, 0 changed, 0 destroyed.		-

#### 步骤10 单击"输出",查看虚拟IP及云服务器相关信息。

图 3-24 输出信息										
· · · · · · · · · · · · · · · · ·	行计划	1000年1月1日日日 2010年1日日 11日日 11日日 11日日 11日日 11日日 11日日 11								
名称	类型	值								
這纏退示	string	环境初始化大约需要15分钟,请耐心等待初始化完成。主数据率私网IP地址:192.168.100.111,从								

----结束

## 3.3 开始使用

安全组规则修改(可选)

## 须知

- MySQL服务端口号默认3306,默认对该方案创建的VPC子网网段放开,请参考修改 安全组规则,配置IP地址白名单,以便能正常访问服务。
- 该解决方案使用22端口用来远程登录云服务器,默认对该方案创建的VPC子网网段 放开,请参考修改安全组规则,配置IP地址白名单,以便能正常访问服务。

安全组实际是网络流量访问策略,包括网络流量入方向规则和出方向规则,通过这些 规则为安全组内具有相同保护需求并且相互信任的云服务器、云容器、云数据库等实 例提供安全保护。

如果您的实例关联的安全组策略无法满足使用需求,比如需要添加、修改、删除某个 TCP端口,请参考以下内容进行修改。

- 添加安全组规则:根据业务使用需求需要开放某个TCP端口,请参考添加安全组规则添加入方向规则,打开指定的TCP端口。
- 修改安全组规则:安全组规则设置不当会造成严重的安全隐患。您可以参考修改 安全组规则,来修改安全组中不合理的规则,保证云服务器等实例的网络安全。
- 删除安全组规则:当安全组规则入方向、出方向源地址/目的地址有变化时,或者 不需要开放某个端口时,您可以参考删除安全组规则进行安全组规则删除。
- 步骤1 登录华为云服务器控制台,查看一键部署创建的云服务及其绑定的弹性公网IP。

**图 3-25** 云服务器

弹性	<b>村生云脳务器</b> ① ① 一紙の新 ① 使用油商 解交別性云服务器												
	● 如果云服务器一罐式重赏商码功能并生效,建议必须商码重置简件开启一幅重置面积功能。												
	我的EC	S: 亚太-曼谷 (4) 中国-雷	)港 (1)										Q
C	开机		重置密码		88 × ) (91	<u>н</u> ~ )							
	0. 🔮	称:mha × 添加筛选条件											×   (9) (0) (1)
	۰	名称/ID 😔	监控	安全	状态 ⊖	可用区 🖯	规格/镜像 ⇔	操作系统 令	IP地址 ⊖	计费 令	企业项目 ⇔	标签 🖯	操作
		highly-available-m FlexusX 5a361e75-54a9-4e54		٥	這行中	可用区3	2vCPUs   4GiB   x1.2u.4g CentOS 7.6 64bit	Linux	122 192	按需计费 2024/07	default	-	远程登录 更多 >
		highly-available-m FlexusX a3271388-594a-4dbf-b	2	٥	运行中	可用区2	2vCPUs   4GiB   x1.2u.4g CentOS 7.6 64bit	Linux	159 192	按需计费 2024/07	default	-	远程登录 更多 ~
		highly-available-m FlexusX bf7d2dbe-cf5b-45bd-b	-	٥	😏 运行中	可用区1	2vCPUs   4GiB   x1.2u.4g CentOS 7.6 64bit	Linux	122 192	按需计费 2024/07	default		远程登录 更多 ~
总	条数:::	3 10 ∨ < 1 >											

步骤2 打开业务虚拟机所属的子网,单击"IP地址管理"查看虚拟IP。

#### 图 3-26 VIP

< mha-mysql-subnet			С
基本信息 IP地址管理 标签			
申请虚拟IP地址 解绑弹性公网IP 教我配置			虚拟P地址 ▼   溶输入查询的关键字 Q C
	绑定的弹性公网IP	桐定的实例	操作
192.168.100.99	-	-	绑定弹性公网IP 绑定实例 更多 ▼

**步骤3** 查看安全组。打开**安全组控制台**,找到以虚拟私有云VPC名称为前缀的安全组,单击 进入查看该方案创建的安全组规则,入方向规则默认22端口、3306端口全放开,请参 考**安全组规则修改(可选)**进行修改。

#### **图 3-27** 安全组

( hgh) yrailide mba grygd clarker deno (中)人気的) (中三成 本不信思 人方向規則 炭気気例 新芸										
	級員體的生效情況不同,为了盧魚部	的安全组织则不生效,请您添加规则的,单	由此处了解评情。					×		
<b>71059</b> (78870)	RR (100 - 80	N田建口 入方向規則 5 夏春安全语	Ref (					0		
□ 优先级	策略	英型	协议输口	源地址	1960.	修改时间	操作			
0.1	允许	IPv4	ICMP:金紹	0.0.0.00 ①	允许ping程序测试云程务器的道…	2024/07/22 10:47:07 GMT+08:00	修改 复制 勤務			
0.1	允许	IPv4	TCP : 22	192.168.100.0/24	允许SSH远程道接云服得器	2024/07/22 10:47:07 GMT+08:00	1022 2011 BIN			
0.1	允许	IPv4	TCP : 3306	192.168.100.0/24	允许使用3306跳口直接数据库	2024/07/22 10:47:07 GMT+08:00	1022 X211 BH			
0 100	允许	IPv6	±15	highly-available-mha-mysql-cluster-demo	-	2024/07/22 10:47:07 GMT+08:00	102 211 BH			
100	允许	IPv4	±15	highly-available-mha-mysql-cluster-demo		2024/07/22 10:47:07 GMT+08:00	1022 IEN 1819			
忌条数:5 10 🗸 <	1 >									

#### 步骤4 登录三台云服务器。管理员账户为root。

图 3-28 使用远程连接软件登录



**步骤5** 释放"主数据库"及"从数据库"绑定的弹性公网IP。登录华为云服务器控制台,选择以"master"、"slave1"为后缀的两台主从数据库服务器,分别单击其绑定的弹性公网IP,单击"解绑>是"进行解绑(注意请勿释放从数据库slave2绑定的公网IP,其上安装了MHA服务软件,故障切换时需要发送报警邮件,如果释放会导致报警邮件发送失败)。

#### 图 3-29 解绑 EIP

弹性云服务器 ⑦		③ 汗介 。 一種珍断   44 最終	动态 1 12 使用指南 为艾华性云般的器
我的ECS: 华北北京四 (40)   华南-广州 (20)   亚太-新加坡 (3)   华	北-乌兰窯布一 (2)   中国-香港 (1)		с
开机 关机 重团运码 更多 ▼			С ⊚ Ц В ≡
名称: mha-mysql-m 💿 添加筛选条件			× 0 0 Q
_ 各称ID ↓= 监控 可用E	7 状态 7 现格·镜镜	IP地址 计费模式 7 企业项目	标签 操作
mha-mysql-master 59884b3a-93e6-4c93-bfd0-1649b 可用E	1	12. 14 (弹性公网 按需计器 192.168.100.111 (私有) 2022/09/01 default	- 远程登录 更多 ▲
			购买相同配置
			关机
			重官
			<u>重要</u> 密码 本面积终
			5000×100月
			一般時 ⑦
			<ul> <li>(请像/磁曲备份)</li> <li>(请像/磁曲备份)</li> </ul>
			安全组织则配置
			修改私有IP
			₩390年出公1911 修改常 <b>党</b>
			切换VPC

#### **图 3-30** 确认解绑

解绑弹性公网IP			
确定解绑mha	u-mysql-master的弹性2	SMIL5	
弹性公网IP	带宽大小	已绑定网卡	
mha-mysql-eip	5 Mbit/s	192.168.100.111	
未绑定主机的弹性公网IP会线	续计费,若不再使用可以选择 <mark>释</mark> 放	τ	
	是否		

**步骤6** 释放弹性公网IP。找到上一步骤释放的两个弹性公网IP,分别单击右侧"更多>释放> 是",释放弹性公网IP。

图 3-31 释放 EIP

弹性公网IP ②									(2) iPth (2) (2)	更用描言 购买单性公网IP
解绑 修改带宽 续费	新游 作业资金 续进 <b>至多 v</b>									
弹性公网IP(IPv4): 119.13.104.10 🔘	▼ 添加等选	影件								×Q
· 弹性公网IP	监控	状态	安全	类型	带宽	带宽详情	已绑定实例	计娄模式	企业项目	操作
119.13.104.10 highly-available-mha 35244609-e9tb-46cd-9237-e	Ø	◎ 未绑定	0	全动态BGP	highly-available-mha	按带宽计器 5 Mbit/s	未绑定实例,扣费中	按票 2023/03/09 10:57:01	default	御定  解御 更多 ▼ 作改帝究
										释放 加入共享帯密
										转包年/包月

#### **图 3-32** 确认释放



----结束

## 环境初始化

服务器重启后,有可能导致集群服务停止,需要用户重新手动启动服务,下面是手动 开启服务的介绍。 **步骤1** 重新配置虚拟IP。登录主数据库服务器,执行ifconfig eth0:1 VIP/24命令,VIP为3.3步骤3或3.2步骤9中获取的VIP地址。

图 3-33 重新配置 VIP



**步骤2**开启MHA服务。登录MHA Manager服务器名称后缀为slave2,执行mha\_app1\_start 命令启动MHA监控服务。检查mha状态为 "running",则集群服务启动成功。

图 3-34 开启 MHA 服务



----结束

#### MySQL 使用

该解决方案默认创建三台云服务器,分别安装Mysql-5.7.34版本的数据库,一主(后缀 名为master)两从(后缀名为slave1、slave2)。MySQL中默认创建名为mysql的用户 组并添加mysql用户,服务端口默认开启3306。主数据库上创建主从复制账户repl,密 码同云服务器初始化密码,允许登录地址为192.168.100.0/24网段。MHA Manger默 认安装在从数据库slave2上,管理账户mha,密码同云服务器初始化密码。

查看主从数据库复制状态 SHOW SLAVE STATUS\G;

#### 图 3-35 从数据库复制状态

<pre>&gt; show slave status\G;</pre>	
***************************************	LOM **********************
Slave IO State:	Waiting for master to send event
Master_Host:	192.168.100.111
Master User:	repl
Master Port:	3306
Connect Retry:	10
Master Log File:	mysgl bin.000002
Read Master Log Pos:	740
Relay Log File:	mha-mysgl-slave2-relay-bin.000002
Relay_Log_Pos:	953
Relay Master Log File:	mysal bin.000002
Slave_I0_Running:	Yes
Slave_SQL_Running:	Yes
Nepticate_po_pb.	
Replicate_Ignore_DB:	
Replicate_Do_Table:	
Replicate_Ignore_Table:	
Replicate_Wild_Do_Table:	
Replicate_Wild_Ignore_Table:	
Last_Errno:	θ
Last_Error:	
Skip_Counter:	θ
Exec_Master_Log_Pos:	740
Relay_Log_Space:	1171
Until_Condition:	None
Until_Log_File:	
Until_Log_Pos:	8
Master_SSL_Allowed:	No
Master_SSL_CA_File:	
Master_SSL_CA_Path:	
Master_SSL_Cert:	
Master_SSL_Cipher:	
Master_SSL_Key:	
Seconds Benind Master:	
Master_SSL_verity_server_cert:	NO
Last_IO_Errno:	
Last_IO_EFFOF:	9
	lä in the second se
Replicate Topore Server Idea	
Master Server Ids:	111
master_server_10;	

在主数据库Master上创建复制账户命令(默认已创建repl账户,密码为云服务器初始 化密码):

mysql -uroot -S /tmp/mysql.sock -e "grant replication slave on \*.\* to 账户@'%' identified by '密码'"; 例如 mysgl uroot S /tmp/mysgl.sock o "grant replication clave on \*.\* to repl@'192.168.100 %' identified by

mysql -uroot -S /tmp/mysql.sock -e "grant replication slave on \*.\* to repl@'192.168.100.%' identified by '123'";

在主数据库Master上创建MHA管理账户(默认已创建mha账户,密码为云服务器初始 化密码 ):

mysql -uroot -e "GRANT ALL PRIVILEGES ON \*.\* TO 账户@'允许登录地址' IDENTIFIED BY '密码'''; 例如: mysql -uroot -e "GRANT ALL PRIVILEGES ON \*.\* TO mha@'192.168.100.%' IDENTIFIED BY '123'';

#### 修改MySQL账户密码

update mysql.user set authentication\_string=password('密码') where user='账户' and Host = 'localhost'; 例如:

update mysql.user set authentication\_string=password('123456') where user='repl' and Host = '192.168.100.%';

#### 🛄 说明

修改MySQL数据库中账户密码,如修改了主从复制账户密码,须同时在从数据库重新配置主数据库信息:

```
> CHANGE MASTER TO
```

MASTER\_HOST='192.168.100.111',

MASTER\_USER='repl',

MASTER\_PASSWORD='密码',

MASTER\_PORT=3306,

MASTER\_CONNECT\_RETRY=10,

MASTER\_AUTO\_POSITION=1;

> START SLAVE;

• 修改主从复制账户及MHA管理账户密码后,需要在MHA Manager(即从数据库slave2) app1配置文件中同步修改密码:

vim /datadisk/mha/conf/app1.cnf修改password字段值。

## MHA 使用

MHA Manager安装在从数据库slave2中,一个MHA可以管理多套主从,只需要创建不同的配置文件即可,方案初始化时默认创建一套主从配置文件,MHA管理的用户默认mha,密码同云服务器初始化密码,配置文件路径:/datadisk/mha/conf/app1.cnf。

#### MHA管理命令:

主从数据库互信检查 masterha\_check\_ssh --conf=/datadisk/mha/conf/app1.cnf 见图15, 出现 "All SSH connection tests passed successfully"则说明三台服务器可以互相免密登录

#### **图 3-36** 互信检查

[root@mha-mysql-slave2 ~]# masterha check sshconf=/mha/conf/app1.cnf						
Thu Sep 1 10:50:48 2022 - [warning] Global configuration file /etc/masterha_default.cnf not found. Skipping.						
Thu Sep 1 10:50:48 2022 - [info] Reading application default configuration from /mha/conf/app1.cnf.						
Thu Sep 1 10:50:48 2022 - [info] Reading server configuration from /mha/conf/app1.cnf						
Thu Sep 1 10:50:48 2022 - [info] Starting SSH connection tests.						
Thu Sep 1 10:50:49 2022 - [debug]						
Thu Sep 1 10:50:48 2022 - [debug] Connecting via SSH from root@192.168.100.111(192.168.100.111:22) to root@192.168.100.112(192.168.100.112:22)						
Thu Sep 1 10:50:49 2022 - [debug] ok.						
Thu Sep 1 10:50:49 2022 - [debug] Connecting via SSH from root@192.168.100.111(192.168.100.111:22) to root@192.168.100.113(192.168.100.113:22)						
Thu Sep 1 10:50:49 2022 - [debug] ok.						
Thu Sep 1 10:50:50 2022 - [debug]						
Thu Sep 1 10:50:49 2022 - [debug] Connecting via SSH from root@192.168.100.112(192.168.100.112:22) to root@192.168.100.111(192.168.100.111:22)						
Thu Sep 1 10:50:49 2022 - [debug] ok.						
Thu Sep 1 10:50:49 2022 - [debug] Connecting via SSH from root@192.168.100.112(192.168.100.112:22) to root@192.168.100.113(192.168.100.113:22)						
Thu Sep 1 10:50:50 2022 - [debug] ok.						
Thu Sep 1 10:50:51 2022 - [debug]						
Thu Sep 1 10:50:49 2022 - [debug] Connecting via SSH from root@192.168.100.113(192.168.100.113:22) to root@192.168.100.111(192.168.100.111:22).						
Thu Sep 1 10:50:50 2022 - [debug] ok.						
Thu Sep 1 10:50:50 2022 - [debug] Connecting via SSH from root@192.168.100.113(192.168.100.113:22) to root@192.168.100.112(192.168.100.112:22).						
Thu Sep 1 10:50:50 2022 - dabug2 - dabbug2 -						
Thu Sep 1 10:50:51 2022 - info] All SSH connection tests passed successfully.						
[root@mha-mysql-slave2 ∞j#						

#### 主从数据库状态检查

masterha\_check\_repl --conf=/datadisk/mha/conf/app1.cnf 见图16,出现"MySQL Replication Health is OK"则说明主从状态良好

#### **图 3-37** 主从数据库状态

Thu	Sep	1	10:52:10	2022		[info]	Alive Servers:
Thu	Sep	1	10:52:10	2022		[info]	192.168.100.111(192.168.100.111:3306)
Thu	Sep		10:52:10	2022		[info]	192.168.100.112(192.168.100.112:3306)
Thu	Sep		10:52:10	2022		[info]	192.168.100.113(192.168.100.113:3306)
Thu	Sep		10:52:10	2022		[info]	Alive Slaves:
Thu	Sep		10:52:10	2022		[info]	192.168.100.112(192.168.100.112:3306) Version=5.7.34-log (oldest major version be
Thu	Sep		10:52:10	2022		[info]	GTID ON
Thu	Sep		10:52:10	2022		[info]	Replicating from 192.168.100.111(192.168.100.111:3306)
Thu	Sep		10:52:10	2022		[info]	Primary candidate for the new Master (candidate_master is set)
Thu	Sep		10:52:10	2022		[info]	192.168,100.113(192.168.100.113:3306) Version=5.7.34-log (oldest major version be
Thu	Sep	1	10:52:10	2022		[info]	GTID ON
Thu	Sep	1	10:52:10	2022		[info]	Replicating from 192.168.100.111(192.168.100.111:3306)
Thu	Sep	1	10:52:10	2022		[info]	Current Alive Master: 192.168.100.111(192.168.100.111:3306)
Thu	Sep		10:52:10	2022		[info]	Checking slave configurations.
Thu	Sep		10:52:10	2022		[info]	read_only=1 is not set on slave 192.168.100.112(192.168.100.112:3306).
Thu	Sep	1	10:52:10	2022		[info]	read_only=1 is not set on slave 192.168.100.113(192.168.100.113:3306).
Thu	Sep	1	10:52:10	2022		[info]	Checking replication filtering settings
Thu	Sep		10:52:10	2022		[info]	binlog_do_db= , binlog_ignore_db=
Thu	Sep	1	10:52:10	2022		[info]	Replication filtering check ok.
Thu	Sep		10:52:10	2022		[info]	GTID (with auto-pos) is supported. Skipping all SSH and Node package checking.
Thu	Sep	1	10:52:10	2022		[info]	Checking SSH publickey authentication settings on the current master.
Thu	Sep	1	10:52:10	2022		[info]	HealthCheck: SSH to 192.168.100.111 is reachable.
Thu	Sep		10:52:10	2022		[info]	
192.	168.	100	.111(192	.168.	100	.111:3	306) (current master)
+	192.	168	.100.112	(192.)	168	.100.1	12:3306)
+	192.	168	.100.113	(192.	168	.100.1	13:3306)
Thu	Sen		10.52.10	2022		Finfol	Checking replication health on 192 168 100 112
Thu	Sen	1	10:52:10	2022		Linfol	ok
Thu	Sen		10:52:10	2022		linfol	Checking replication health on 192 168 100 113
Thu	Sen	- 1	10:52:10	2022		linfol	ok
Thu	Sen	1	10-52-10	2022		linfol	Checking master in failover script status.
Thu	Sen	1	10:52:10	2022		linfol	/mbassrints/master in failovercommand=statusssh user=rootorig master hos
io n	aete		ort=3306			C and a 1	
- ug _u	100 00	· _ P	01 0-5500				
							det la contra de la contra contra contra de la
TN 2	CRIP	11	EST====/9	sbin/	tte	ontig	eth0:1 down==/sbin/ifconfig eth0:1 192.168.100.99/24===
Chec	k ing	th	e Status	of t	he	script	. ок
Thu	Sep		10:52:10	2022		[info]	ок.
Thu	Sep		10:52:10	2022		warni	ng] shutdown_script is not defined.
Thu	Sep		10:52:10	2022		[info]	Got exit code 0 (Not master dead).
MySO	L Re	pli	cation H	ealth	is	0K.	
	10-1			102	1		

启动MHA监控 mha\_app1\_start

检查MHA运行状态 mha\_app1\_status

停止MHA监控 mha\_app1\_stop

#### 查看MHA日志

tail -f /datadisk/mha/logs/manager

## 故障模拟

#### 步骤1 在MHA Manager上查看日志变化:

tail -f /datadisk/mha/logs/manager

#### 图 3-38 日志

(root@mha-mysql·slavez ~µ# mha_ppp]_status ppt[ptd:2426] is running[0:PING_0K], master:192.168.100.111 [root@mha-mysql-slave2 ~µ# tall - f /mha/logs/manager						
IN SCRIPT TEST====/sbin/ifconfig eth0:1 down==/sbin/ifconfig eth0:1 192.168.100.99/24===						
Checking the Status of the script OK Thu Sep 1 11:30:37 2022 - [uni0] OK. Thu Sep 1 11:30:37 2022 - [uni0] Shutdown_script is not defined. Thu Sep 1 11:30:37 2022 - [uni0] Set master ping interval 3 seconds. Thu Sep 1 11:30:37 2022 - [uni0] Starting ping health check on 192.100.100.111(192.100.100.111:3306) Thu Sep 1 11:30:37 2022 - [uni0] Starting ping health check on 192.100.00.111(192.100.100.111:3306)						

#### 步骤2 关闭主数据服务:

systemctl stop mysqld

**步骤3** 回到MHA Manager服务器,查看日志,出现"Master failover to ......completed successfully."

#### **图 3-39** 故障转移

Thu Sep 1 11:34:07 2022 - [uni0] OK. Thu Sep 1 11:34:07 2022 - [uni0] VK. Thu Sep 1 11:34:07 2022 - [uni0] * Phase 3: Hester Recovery Phase completed. Thu Sep 1 11:34:07 2022 - [uni0] Thu Sep 1 11:34:08 2022 - [uni0] Thu Sep 1 11:34:09 202	Enabling the VIP - 192.168.100.99/24 on the new master - 192.168.100.112						
Thu Sep 1 11:34:07 2022 - [unit] + Funished master recovery Successfully. Thu Sep 1 11:34:07 2022 - [unit] + Phase 3: Master Recovery Phase completed. Thu Sep 1 11:34:07 2022 - [unit] Thu Sep 1 11:34:07 2022	Thu Sep 1 11:34:07 2022 - [info] OK.						
Thu Sep 1 11:34:07 2022 - [uni0] * Phase 3: Moster Recovery Phase completed. Thu Sep 1 11:34:07 2022 - [uni0] Thu Sep 1 11:34:09 2022 - [uni0] Set 10:24:08 2060 - [uni0] Th	Thu Sep 1 11:34:07 2022 - [info] ** Finished master recovery successfully.						
Thu Sep 1 11:34:07 2022 - [info] Thu Sep 1 11:34:07 2022 - [info] Resetting Slave started. Thu Sep 1 11:34:07 2022 - [info] Resetting slave 192.108.100.113:3306) and starting replication from the new master 192.108.10 Thu Sep 1 11:34:07 2022 - [info] Resetting slave 192.108.100.113:3306) and starting replication from the new master 192.108.10 Thu Sep 1 11:34:07 2022 - [info] Slave started. Thu Sep 1 11:34:09 2022 - [info] Slave started. Thu Sep 1 11:34:09 2022 - [info] fold walt(2ed2aeb1-2990-11ed-8501-fai03e4d0914:1-2) completed on 192.108.100.113:3306). Executed Thu Sep 1 11:34:09 2022 - [info] fold servers recovered successfully. Thu Sep 1 11:34:09 2022 - [info] for folg messages from 192.108.100.113:3306) started. Thu Sep 1 11:34:09 2022 - [info] for the servers recovered successfully. Thu Sep 1 11:34:09 2022 - [info] Master fallower to 192.108.100.112:3306) completed successfully. Thu Sep 1 11:34:09 2022 - [info] Master fallower to 192.108.100.112:100.112:3306) completed successfully. Thu Sep 1 11:34:09 2022 - [info] Deleted server: netry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [info] Thu Sep 1 11:34:09 2022 - [info] Master fallower to 192.108.100.112:13306) completed successfully. Thu Sep 1 11:34:09 2022 - [info] Thu Sep 1 11:34:09 2022 - [inf	Thu Sep 1 11:34:07 2022 - [info] * Phase 3: Master Recovery Phase completed.						
Thu Sep 1 11:34:07 2022 - [info] * Phase 4: Slaves Recovery Phase Thu Sep 1 11:34:07 2022 - [info] * Phase 4.1: Starting Slaves in parallel Thu Sep 1 11:34:07 2022 - [info] * Phase 4.1: Starting Slaves in parallel Thu Sep 1 11:34:07 2022 - [info] * Phase 4.1: Starting Slaves in parallel Thu Sep 1 11:34:07 2022 - [info] - Slave recovery on host 192.168.100.113(192.168.100.113:3306) started, pid: 14227. Check tmp log /mha/logs/a Thu Sep 1 11:34:09 2022 - [info] - Slave recovery on host 192.168.100.113:3306) and starting replication from the new master 192.108.10 Thu Sep 1 11:34:09 2022 - [info] Executed CHMLME MSIER. Thu Sep 1 11:34:09 2022 - [info] Executed CHMLME MSIER. Thu Sep 1 11:34:09 2022 - [info] Executed CHMLME MSIER. Thu Sep 1 11:34:09 2022 - [info] for do flog messages from 192.168.100.113:3306) and started. Thu Sep 1 11:34:09 2022 - [info] Here slave servers recovered successfully. Thu Sep 1 11:34:09 2022 - [info] All new slave servers recovered successfully. Thu Sep 1 11:34:09 2022 - [info] All new slave servers recovered successfully. Thu Sep 1 11:34:09 2022 - [info] Phase S: New master cleanup phase Thu Sep 1 11:34:09 2022 - [info] Phase S: New master cleanup phase Thu Sep 1 11:34:09 2022 - [info] Phase S: New master cleanup phase Thu Sep 1 11:34:09 2022 - [info] Phase S: New master cleanup phase Thu Sep 1 11:34:09 2022 - [info] Phase S: New master cleanup phase Thu Sep 1 11:34:09 2022 - [info] Phase S: New master cleanup phase Thu Sep 1 11:34:09 2022 - [info] Neater failover to 192.168.100.112:132.06) completed successfully. Thu Sep 1 11:34:09 2022 - [info] Phase S: New master cleanup phase Thu Sep 1 11:34:09 2022 - [info] Phase S: New master cleanup phase Thu Sep 1 11:34:09 2022 - [info] Phase S: New master cleanup phase Thu Sep 1 11:34:09 2022 - [info] Neater failover to 192.168.100.111:13306) to 192.168.100.112(192.168.100.111:3306) succeeded. Nu Sep 1 11:34:09 2022 - [info] Neater failover to 192.168.100.112(192.168.100.112:3306) succeeded Nas	Thu Sep 1 11:34:07 2022 - [info]						
Thu Sep 1 11:34:07 2022 - [unio] Thu Sep 1 11:34:09 2022 - [unio] Securetad CHARGE MASTER. Thu Sep 1 11:34:09 2022 - [unio] Thu Sep 1 11:34:09 2022 - [unio] Resetting Slave servers recovered successfully. Thu Sep 1 11:34:09 2022 - [unio] Resetting Slave info on the new master. Thu Sep 1 11:34:09 2022 - [unio] Resetting Slave info on the new master. Thu Sep 1 11:34:09 2022 - [unio] Resetting Slave info on the new master. Thu Sep 1 11:34:09 2022 - [unio] Resetting Slave info on the new master. Thu Sep 1 11:34:09 2022 - [unio] Resetting Slave info on the new master. Thu Sep 1 11:34:09 2022 - [unio] Resetting Slave info on the new master. Thu Sep 1 11:34:09 2022 - [unio] Resetting Slave info on the new master. Securetad Successfully. Thu Sep 1 11:34:09 2022 - [unio] Resetting Slave info on the new master. Securetad Successfully. Thu Sep 1 11:34:09 2022 - [unio] Resetting Slave info on the new master. Securetad Successfully. Thu Sep 1 11:34:09 2022 - [unio] Resetting Slave info on the new master. Securetad Successfully. Securetad Successfully. Securetad Successfully. Securetad Suc	Thu Sep 1 11:34:07 2022 - [info] * Phase 4: Slaves Recovery Phase.						
Thu Sap 1 11:34:07 2022 - [unfo] Thu Sap 1 11:34:07 2022 - [unfo] Slave started, b1:29E-113(19) 2023 - [unfo] Slave started, b1:29E-114(15:20) 2024 - [unfo] Thu Sap 1 11:34:07 2022 - [unfo] Slave started, b1:29E-114(15:20) 2024 - [unfo] Thu Sap 1 11:34:09 2022 - [unfo] S	Thu Sep 1 11:34:07 2022 - [info]						
<pre>Thu Sap 1 11:34:97 2022 - [info] * Phase 4.1: Starting Slaves in parallel Thu Sap 1 11:34:97 2022 - [info] Resetting slave 192.168.100.113:3366) and starting replication from the new master 192.168.100.113:3366) and started. Thu Sap 11:34:09 2022 - [info] Thu Sap 1</pre>	Thu Sep 1 11:34:07 2022 - [info]						
<pre>thu sop 1 11:34:07 2022 - [uni6]</pre>	Thu Sen 1 11:34:07 2022 - [info] * Phase 4.1: Starting Slaves in parallel.						
<pre>Thu Sep 1 11:34:09 2022 - [units] Thu Sep 1 11:34:09 2022 - [units] Thu Sep 1 11:34:09 2022 - [units] Thu Sep 1 11:34:09 2022 - [units] Resetting slave 192.168.100.113(192.168.100.113:3306) and starting replication from the new master 192.168.10 Thu Sep 1 11:34:07 2022 - [units] Resetting slave 192.168.100.113(192.168.100.113:3306) and starting replication from the new master 192.168.10 Thu Sep 1 11:34:07 2022 - [units] Resetted AuMAGE MASTER. Thu Sep 1 11:34:08 2022 - [units] Slave started. Thu Sep 1 11:34:09 2022 - [units] Slave started. Thu Sep 1 11:34:09 2022 - [units] Slave started. Thu Sep 1 11:34:09 2022 - [units] Thu Sep 1 11:34:09 2023 - [units] Thu Sep 1 11:34:09</pre>	Thu Sen 1 11:34-97 2022 . [info]						
<pre>thu sap 1 11:34:09 2022 : [infs] Thu sap 1 11:34:09 2022 : [infs] Thu sap 1 11:34:09 2022 : [infs] Resetting slave 102.168.100.113(192.168.100.113:3306) and starting replication from the new master 192.168.10 Thu sap 1 11:34:07 2022 : [infs] Executed CHANGE MASTER. Thu sap 1 11:34:08 2022 : [infs] Slave started. Thu sap 1 11:34:08 2022 : [infs] Slave started. Thu sap 1 11:34:08 2022 : [infs] dtid wait(2edZaeb1-290c-11ed-3501-fa163edd0914:1-2) completed on 192.168.100.113(192.168.100.113:3306), Execut Thu sap 1 11:34:08 2022 : [infs] dtid wait(2edZaeb1-290c-11ed-3501-fa163edd0914:1-2) completed on 192.168.100.113(192.168.100.113:3306), Execut Thu sap 1 11:34:09 2022 : [infs] dtid wait(2edZaeb1-290c-11ed-3501-fa163edd0914:1-2) completed on 192.168.100.113(192.168.100.113:3306), Execut Thu sap 1 11:34:09 2022 : [infs] that started. Thu sap 1 11:34:09 2022 : [infs] that started. Thu sap 1 11:34:09 2022 : [infs] the save servers recovered successfully. Thu sap 1 11:34:09 2022 : [infs] the save servers recovered successfully. Thu sap 1 11:34:09 2022 : [infs] the save servers recovered succeeded. Thu sap 1 11:34:09 2022 : [infs] Master failower to 192.168.100.112:13060 is unceeded. Thu sap 1 11:34:09 2022 : [infs] Deleted server1 entry from /mha/conf/app1.cnf . Thu sap 1 11:34:09 2022 : [infs] Deleted server1 entry from /mha/conf/app1.cnf . Thu sap 1 11:34:09 2022 : [infs] Deleted server1 entry from /mha/conf/app1.cnf . Thu sap 1 11:34:09 2022 : [infs] Deleted server1 entry from /mha/conf/app1.cnf . Thu sap 1 11:34:09 2022 : [infs] Deleted server1 entry from /mha/conf/app1.cnf . Thu sap 1 11:34:09 2022 : [infs] Deleted server1 entry from /mha/conf/app1.cnf . Thu sap 1 11:34:09 2022 : [infs] Deleted server1 entry from /mha/conf/app1.cnf . Thu sap 1 11:34:09 2023 : [infs] Deleted server1 entry from /mha/conf/app1.cnf . Satter 192.168.160.111(192.168.100.111:3366) is down! Check MHA Manager logs at mha-mysql-slave2:/mha/logs/manager for details. Started automated(non-interactive) failover. Invalog 2:168.160.112:192.</pre>	Thu Sen 1 11:34:07 2022 - [info] - Slave recovery on host 192.168.100.113(192.168.100.113:3306) started, nid: 14227, Check two log /mha/loos/a						
<pre>thu sep 1 11:34:09 2022 - [unit] Hu sep 1 11:34:09 2022 - [unit] Fxecuted CHANGE MASTER. Hu sep 1 11:34:07 2022 - [unit] Fxecuted CHANGE MASTER. Hu sep 1 11:34:08 2022 - [unit] Fxecuted CHANGE MASTER. Hu sep 1 11:34:08 2022 - [unit] Fxecuted CHANGE MASTER. Hu sep 1 11:34:08 2022 - [unit] Fill sep 1 11:34:09 2022 - [unit] Hu sep 1 11:34:09 2023 - [unit] Hu sep 1 11:34:09 2035 - [unit] Hu sep 1 10:34:09 2035 - [unit] Hu sep 1 10:34:09 2055 - [unit] Hu sep 1 10:34:09 2055 - [unit] Hu sep 1 10:34:09 2055 - [unit] Hu sep 1 10:34:00 2055 - [unit] Hu sep 1 10:34:00 2055</pre>	This Sen 1 11:34-09 2022 - [info]						
<pre>Thu Sap 1 11:34:09 2022 - [infs] Resetting slave 102.160.100.113(192.168.100.113:3306) and starting replication from the new master 192.168.10 Thu Sap 1 11:34:09 2022 - [infs] Executed CHANGE MASTER. Thu Sap 1 11:34:08 2022 - [infs] Executed CHANGE MASTER. Thu Sap 1 11:34:08 2022 - [infs] glid wait(2adaab-292c-1104.5501-fa16364d0914:1-2) completed on 192.108.100.113(192.168.100.113:3306). Execu Thu Sap 1 11:34:08 2022 - [infs] glid wait(2adaab-292c-1104.5501-fa16364d0914:1-2) completed on 192.108.100.113(192.168.100.113:3306). Execu Thu Sap 1 11:34:08 2022 - [infs] Thu Sap 1 11:34:08 2022 - [infs] Thu Sap 1 11:34:09 2023 - [infs] Thu Sap 1 11:34:0</pre>	Thu Sep 1 11:34:09 2022 - [info] Log messages from 192 168 100 113						
<pre>Thu Sep 1 11:34:07 2022 - [unit] Resetting slave 102.160.100.113(192.168.100.113:3306) and starting replication from the new master 192.168.10 Thu Sep 1 11:34:07 2022 - [unit] Slave started. Thu Sep 1 11:34:07 2022 - [unit] [fuit wait(red:abab.200c-11ed.8501-fa163edd0914:1-2) completed on 192.168.100.113(192.168.100.113:3306). Execut Thu Sep 1 11:34:07 2022 - [unit] [fuit wait(red:abab.200c-11ed.8501-fa163edd0914:1-2) completed on 192.168.100.113(192.168.100.113:3306). Execut Thu Sep 1 11:34:07 2022 - [unit] [fuit wait(red:abab.200c-11ed.8501-fa163edd0914:1-2) completed on 192.168.100.113(192.168.100.113:3306). Execut Thu Sep 1 11:34:07 2022 - [unit] All new slave servers recovered successfully. Thu Sep 1 11:34:07 2022 - [unit] Thu Sep 1 11:34:09 2022 - [unit] Thu Sep 1 11:34:09 2022 - [unit] 192.168.100.112(192.168.100.112:3306) completed successfully. Thu Sep 1 11:34:09 2022 - [unit] 192.168.100.112(192.168.100.112:3306) completed successfully. Thu Sep 1 11:34:09 2022 - [unit] 192.168.100.112(192.168.100.112:3306) completed successfully. Thu Sep 1 11:34:09 2022 - [unit] 192.168.100.111:3306) to 192.168.100.112(192.168.100.112:3306) succeeded Naster 192.168.100.111(192.168.100.111:3306) is down! Check MHA Manager logs at mha-mysql-slave2:/mha/logs/manager for details. Started automated(non-interactive) failover. Thu Sep 1 11:24:09 202 s 100.112(192.168.100.111:3306) Selected 102.168.100.112(192.168.100.111:3306) is down! Check MHA Manager logs at mha-mysql-slave2:/mha/logs/manager for details. Started automated(non-interactive) failover. Thu Sep 1 11:24:09 204: [unit] faile 100.111(192.168.100.111:3306) Selected 102.168.100.112(192.168.100.112(192.168.100.112(192.168.100.112(3306) Selected 102.168.100.112(192.168.100.111:3306) Selected 102.168.100.112(192.168.100.111:3306) Selected 102.168.100.112(192.168.100.111:3306) Selected 102.168.100.112(192.168.100.112(3306) completed succeeded. 192.168.100.112(192.168.100.112:3306) ox: Activated master T paddress on 192.168.100.112(3306) Selected 102.168.100.112(3</pre>	Thu San 1 11:34-09 2022 - [inf]						
<pre>https://iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii</pre>	The Sep 1 11:34:07 2022 [info] Resetting slave 102 168 100 113(102 168 100 113:3306) and starting realization from the new master 102 168 10						
<pre>http:sp: 111:34:08 2022 - [unit] Slave started. thus sp: 111:34:08 2022 - [unit] git/w stir/cad2ab1-200c-11ed.8501-fa163e4d0914:1-2) completed on 192.168.100.113(192.168.100.113:3306). Execu thus sp: 111:34:09 2022 - [unit] end of log messages from 192.168.100.113;3306) started. thus sp: 111:34:09 2022 - [unit] end of log messages from 192.168.100.113;3306) started. thus sp: 111:34:09 2022 - [unit] All new slave servers recovered successfully. thus sp: 111:34:09 2022 - [unit] * Phase 5: New master cleanup phase thus sp: 111:34:09 2022 - [unit] * Phase 5: New master cleanup phase thus sp: 111:34:09 2022 - [unit] int: 100.112: Resetting slave info on the new master thus sp: 111:34:09 2022 - [unit] int: 100.112: Resetting slave info succeeded. Thu sep: 111:34:09 2022 - [unit] int: 100.112: Resetting slave info succeeded. Thu sep: 111:34:09 2022 - [unit] int: 100.112: Resetting slave info succeeded. Thu sep: 111:34:09 2022 - [unit] int: 100.112: Resetting slave info succeeded. Thu sep: 111:34:09 2022 - [unit] int: 100.112: Resetting slave info succeeded. Thu sep: 111:34:09 2022 - [unit] int: 100.112: Resetting slave info succeeded. Thu sep: 111:34:09 2022 - [unit] int: 100.112: Resetting slave info succeeded. Thu sep: 111:34:09 2022 - [unit]  Failover Report app1: MySQL Master failover 192.168.100.111:13306) to 192.168.100.112(192.168.100.112:3306) succeeded Naster 192.168.100.111(192.168.100.111:13306) is down! Check MHA Manager logs at mha-mysql-slave2:/mha/logs/manager for detalls. Started automated(non-interactive) failover. Thus sep: 112:12:380; 100.112(192.168.100.111:3306) selected 102.168.100.112(192.168.100.112:3306) as new master. 192.168.100.112(192.168.100.112(192.168.100.111:13306) selected 102.168.100.112(192.168.100.112:3306) as new master. 192.168.100.112(192.168.100.112:3306); 0K: Activated master TP address. 192.168.100.112(192.168.100.112:3306); 0K: Activated master TP address. 192.168.100.112(192.168.100.112:3306); 0K: Activated master TP address.</pre>	Thu Sep 1 11:34:07 2022 - [info] Executing Stave Moster Moster						
<pre>http://iiiido.com/iiiiido.com/iiiiido.com/iiiiido.com/iiiiido.com/iiiiido.com/iiiiido.com/iiiiido.com/iiiiido.com/iiiiido.com/iiiiido.com/iiiiido.com/iiiiido.com/iiiiido.com/iiiiido.com/iiiiiido.com/iiiiido.com/iiiiiido.com/iiiiido.com/iiiiiido.com/iiiiido.com/iiiiido.com/iiiiiido.com/iiiiido.com/iiiiiido.com/iiiiiido.com/iiiiiido.com/iiiiiido.com/iiiiiido.com/iiiiiido.com/iiiiiido.com/iiiiiido.com/iiiiiido.com/iiiiido.com/iiiiiiido.com/iiiiiiido.com/iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii</pre>	Thu sep 1 11:34/09 2022 - [info] Electrica chance matter.						
<pre>https://iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii</pre>	The set 1 11:34:00 2022 - [ $[010]$ ] state stated and 2000-11ad 2001 fate2add0014:1 2) completed on 102 162 160 112/102 162 100 112/2206). Even						
<pre>httlsgp 1 11:34:09 202 1 [uf0] == 01/0 [gm 05:alge 1:08 1:09:1:09:1:09:1:09:1:09:1:09:1:09:1:09</pre>	Thu Sep 1 11:34:00 2022 - [un0] gtu wat(202201-290-100-500-10105400014.1-2) Compteted on 192.100.100.113(192.100.100.113.3500). Execu						
<pre>Mu Sep 1 11:34:09 2022 - [ unit 0] -A Slave Off Most 192:108:100:13(32:00) file 100:13(33:00) started. Mu Sep 1 11:34:09 2022 - [ unit 0] -A Slave Off Most 192:108:100:13(32:00) file 100:13(33:00) started. Thu Sep 1 11:34:09 2022 - [ unit 0] + Phase 5: New master cleanup phase Thu Sep 1 11:34:09 2022 - [ unit 0] + Phase 5: New master cleanup phase Thu Sep 1 11:34:09 2022 - [ unit 0] + Phase 5: New master cleanup phase Thu Sep 1 11:34:09 2022 - [ unit 0] + Phase 5: New master cleanup phase Thu Sep 1 11:34:09 2022 - [ unit 0] + Phase 5: New master cleanup phase Thu Sep 1 11:34:09 2022 - [ unit 0] Naster failover to 192:108:100:112:13206) completed successfully. Thu Sep 1 11:34:09 2022 - [ unit 0] Deleted server! entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [ unit 0] Deleted server! entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [ unit 0] Deleted server! entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [ unit 0] Deleted server! entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [ unit 0] Deleted server! entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [ unit 0] Deleted server! entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [ unit 0] Deleted server! entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [ unit 0] Deleted server! entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [ unit 0] Deleted server! Belete 192:168.100.111(192:168.100.111:3306) is down! Check MHA Manager logs at mha-mysql-slave2:/mha/logs/manager for details. Started automated(non-interactive) failover. Invalidated master TP address on 192:168.100.111(192:168.100.111:3306) Selected 102:168.100.112(192:168.100.112(390) as a new master. 192:168.100.112(192:168.100.112(390)) or: Activated master TP address. 192:168.100.112(192:168.100.112:3306): Or: Activated master TP address. 192:168.100.112(192:168.100.112:3306): Or: Activated master TP address. 192:168.100.112(192:168.100.112:3306): Or: Activated master TP address. 192:168.100.112(192:</pre>	The set $f$ (1.54.69 2022 - [cfr] = 10 of cog messages from 192.106.100.113.						
<pre>https://iii.strop.db22 - [unit] Alt new State Server's recovers recovers accessfully. Thu Sep 1 11:34:09 2022 - [unit] Thu Sep 1 11:34:09 2022 - [unit] Thu Sep 1 11:34:09 2022 - [unit] Thu Sep 1 11:34:09 2022 - [unit] Resetting slave info on the new master Thu Sep 1 11:34:09 2022 - [unit] Deleted server1 entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [unit] Deleted server1 entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [unit] Deleted server1 entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [unit] Deleted server1 entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [unit] Deleted server1 entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [unit] Deleted server1 entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [unit] Deleted server1 entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [unit] Deleted server1 entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [unit] Deleted server1 entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [unit] Deleted server1 entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [unit] Deleted server1 entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [unit] Deleted server1 entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [unit] Deleted server1 entry from /mha/conf/app1.cnf . Set Set 192.168.100.111(192.168.100.111:3306) is down! Check MHA Manager logs at mha-mysql-slave2:/mha/logs/manager for details. Started automated(non-interactive) failower. Invalidated master IP address on 192.108.100.112(192.168.10</pre>	The Sep 1 11:44:09 2022 - [ (hid) - Stave on nost 192.108.100.113(192.108.100.113:3300) Started.						
<pre>Thu Sep 1 11:34:09 2022 - [ unfo] Thu Sep 1 11:34:09 2022 - [ unfo] * Phase 5: New master cleanup phase Thu Sep 1 11:34:09 2022 - [ unfo] Resetting slave info on the new master Thu Sep 1 11:34:09 2022 - [ unfo] 192.168.109.112: Resetting slave unfo succeeded. Thu Sep 1 11:34:09 2022 - [ unfo] Delted server1 entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [ unfo] Delted server1 entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [ unfo] Delted server1 entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [ unfo] Delted server1 entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [ unfo] Delted server1 entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [ unfo] Delted server1 entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [ unfo] Delted server1 entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [ unfo] Delted server1 entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [ unfo] Delted server1 entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [ unfo] Delted server1 entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [ unfo] Delted server1 entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2022 - [ unfo] Delted server1 entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2023 - [ unfo] Delted server1 entry from /mha/conf/app1.cnf . Thu Sep 1 11:34:09 2023 - [ unfo] Delted server1 entry from /mha/conf/app1.cnf . Thu Sep 1 10:2:168.100.111(192.168.100.111:3306) is down! Check MHA Manager logs at mha-mysql-slave2:/mha/logs/manager for details. Started automated(non-interactive) failover. Thus I disted master T Paddress on 192.168.100.111(192.168.100.111:3306) Selected 102.168.100.112(192.168.100.112:3306) as a new mester. 192.168.100.112(192.168.100.112:3306): 0: Attivated master T Paddress. 192.168.100.112(192.168.100.112:3306): 0: Attivated master T Paddress. 192.168.100.112(192.168.100.112:3306): 0: Attivated master T Paddress. 192.168.100.112(192.168.100.112:3306): 0: Attivated master T Paddress. 192.168.100.112(192.168.100.112(392.68.00.012</pre>	The Sep 1 11:34:09 2022 - [tho] Att new stave servers recovered successfully.						
<pre>httpsp i 11:34:09 2022 - [info] httpsp i 11:34:09 2022 - [info] httpsp i 11:34:09 2022 - [info] httpsp i 11:34:09 2022 - [info] Resetting slave info on the new master httpsp i 11:34:09 2022 - [info] Master failover to 102.168.100.112(192.168.100.112:3306) completed successfully. httpsp i 11:34:09 2022 - [info] httpsp i 11:34:09 1022 - 108:100 - 112:3306) httpsp i 11:3306) httpsp i 11:34:09 1022 - 108:100 - 112:13206 + 102 - 108:100 - 112:1330</pre>	Into Sep 1 11:34:09 $2022 - [1070]$						
Inu Sep 1 11:34:09 2022 - [unt0]         Thu Sep 1 11:34:09 2022 - [unt0] Resetting slave info on the new master         Thu Sep 1 11:34:09 2022 - [unt0] 192.168.100.112: Resetting slave info oucceeded.         Thu Sep 1 11:34:09 2022 - [unt0] Master failover to 192.168.100.112:192.168.100.112:3306) completed successfully.         Thu Sep 1 11:34:09 2022 - [unt0] Delted serveri entry from /mha/conf/app1.cnf .         Thu Sep 1 11:34:09 2022 - [unt0]         Int1:34:09 2022 - [unt0]         Int:34:09 202 - [unt0]         Int:34:09 2022 - [unt0]         Int	Thu Sep 1 11:34:09 2022 - [into] * Phase S: New master cleanup phase.						
Thu Sep 1 11:34:09 2022 - [unt0] Resetting slave unt0 on the new master         Thu Sep 1 11:34:09 2022 - [unt0] Master failower to 102.168.100.112(192.168.100.112:3306) completed successfully.         Thu Sep 1 11:34:09 2022 - [unt0] Deleted server1 entry from /mha/conf/app1.cnf .         Thu Sep 1 11:34:09 2022 - [unt0] Deleted server1 entry from /mha/conf/app1.cnf .         Thu Sep 1 11:34:09 2022 - [unt0]         Thu Sep 1 11:34:09 2022 - [unt0]         Thu Sep 1 11:34:09 2022 - [unt0]         Deleted server1 entry from /mha/conf/app1.cnf .         app1: MySQL Master failower 192.168.100.111(192.168.100.111:3306) to 192.168.100.112(192.168.100.112:3306) succeeded         Master 192.168.100.111(192.168.100.111:3306) is down!         Check MHA Manager logs at mha-mysql-slave2:/mha/logs/manager for details.         Started automated(non-interactive) failower.         Invalidated master IP address on 192.108.100.111(192.168.100.111:3306)         Seleted 192.168.100.112(192.168.100.111(192.168.100.111:3306)         Seleted 192.168.100.112(192.168.100.111(192.168.100.111:3306)         Seleted 192.168.100.112(192.168.100.112(3906) as a new master.         192.168.100.112(192.168.100.112(3936) (S: Applying all logs succeeded.         192.168.100.112(192.168.100.112:3306) (S: Activated master IP address.         192.168.100.113(192.168.100.112:3306) (S: Activated master IP address.         192.168.100.113(192.168.100.112:3306) (S: Activated master IP address.         192.16	Inu Sep 1 11:34:09 2022 - [unto]						
Thu Sep 1 11:34:09 2022 - [unt0] 192.108.100.112? Nesetring slave into succeeded.         Thu Sep 1 11:34:09 2022 - [unt0] Deleted serveri entry from /mha/conf/app1.cnf .         Thu Sep 1 11:34:09 2022 - [unt0] Deleted serveri entry from /mha/conf/app1.cnf .         Thu Sep 1 11:34:09 2022 - [unt0] Deleted serveri entry from /mha/conf/app1.cnf .         Thu Sep 1 11:34:09 2022 - [unt0]         app1: MySQL Master failover 192.168.100.111(192.168.100.111:3306) to 192.168.100.112(192.168.100.112:3306) succeeded         Master 192.168.100.111(192.168.100.111:3306) is down!         Check MHA Manager logs at mha-mysql-slave2:/mha/logs/manager for details.         Started automated(non-interactive) failover.         Ivelia Init(192.168.100.111(192.168.100.111:3306)         Started automated(non-interactive) failover.         Ivelia Init(192.168.100.112(192.168.100.111(192.166.100.111:3306)         Started automated(non-interactive) failover.         Ivelia Init(192.168.100.112(192.168.100.111(192.166.100.111:3306)         Started automated(non-interactive) failover.         Ivelia Init(192.168.100.112(192.168.100.111(192.168.100.111:3306)         Started automated(non-interactive) failover.         Ivelia Init(192.168.100.112(192.168.100.111(192.168.100.111:3306)         Started automated(non-interactive) failover.         Ivelia Init(192.168.100.112(192.168.100.111(192.168.100.111:3306)         Started automated(non-interactive) failover.         Ive	Thu Sep 1 11:34:09 2022 - [unto] Resetting slave unto on the new master.						
Thu Sep 1 11:34:09 2022 - [info] Deleted server1 entry from /mha/conf/appl.cnf . Thu Sep 1 11:34:09 2022 - [info] Deleted server1 entry from /mha/conf/appl.cnf . Thu Sep 1 11:34:09 2022 - [info] Failover Report app1: MySQL Master failover 192.168.100.111(192.168.100.111:3306) to 192.168.100.112(192.168.100.112:3306) succeeded Master 192.168.100.111(192.168.100.111:3306) is down! Check MHA Manager logs at mha-mysql-slave2:/mha/logs/manager for details. Started automated(non-interactive) failover. Invalidated master IP address on 192.168.100.111(192.168.100.111:3306) Selected 192.168.100.112(192.168.100.111(192.168.100.111:3306) as new master. 192.168.100.112(192.168.100.112(3936)) ox: Activated master IP address. 192.168.100.112(192.168.100.112:3306): 0x: Activated master	Thu Sep 1 11:34:09 2022 - [Info] 192.108.100.112: Resetting slave info succeeded.						
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Master failover to 192.108.100.112(192.168.100.112:3306) completed successfully.	132 160 100 112(102 160 100 112:336), 0K. ACTVATED METER F AUDIES.						
Histor failover to 192.168.100.112/192.168.100.112/3306) completed successfully.	132:100.100.113(132:100.113:3300); OK: Stave started, TepttCatting (Fom 132:100.112(132:108.100.112:3306))						
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	The sep is into the force force and match						

步骤4 登录从数据库slave1,查看虚拟IP漂移成功。

#### 图 3-40 VIP 漂移成功

[root@mha-mysql-slave1 ~]# ifconfig
eth0: flags=4163 <up,broadcast,running,multicast> mtu 1500</up,broadcast,running,multicast>
inet 192.168.100.112 netmask 255.255.255.0 broadcast 192.168.100.255
inet6 fe80::f816:3eff:fe4d:915 prefixlen 64 scopeid 0x20 <link/>
ether fa:16:3e:4d:09:15 txqueuelen 1000 (Ethernet)
RX packets 500720 bytes 739812916 (705.5 MiB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 32344 bytes 2830128 (2.6 MiB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
eth0:1: flags_4162_UP_PROADCAST,RUNNING,MULTICAST> mtu 1500
Inet 192.168.100.99 netmask 255.255.255.0 broadcast 192.168.100.255
Cther fartorsered.co. 15 txqueuelen 1000 (Ethernet)
lo: flags=73 <up,loopback,running> mtu 65536</up,loopback,running>
inet 127,0.0,1 netmask 255.0.0.0
inet6 ::1 prefixlen 128 scopeid 0x10 <host></host>
loop txqueuelen 1000 (Local Loopback)
RX packets 96 bytes 18912 (18.4 KiB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 96 bytes 18912 (18.4 KiB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

**步骤5** 查看MHA Manager运行状态,此时MHA Manager已经完成工作,处于停止状态。 mha\_app1\_status

图 3-41 MHA 完成故障转移

```
[root@mha-mysql-slave2 ~]# mha_app1_status
app1 is stopped(2:NOT_RUNNING).
[root@mha-mysgl-slave2 ~]#
```

步骤6 登录收件人邮箱查看报警邮件。

#### 图 3-42 报警邮件

app1: MySQL Master failover 192.168.100.111(192.168.100.111:3306) to 192.168.100.112(192.168.100.112:3306) succeeded

收件人

Master 192.168.100.111(192.168.100.111:3306) is down!

Check MHA Manager logs at mha-mysql-xyh-slave2:/mha/logs/manager for details.

Started automated(non-interactive) failover. Invalidated master IP address on 192.168.100.111(192.168.100.111:3306) Selected 192.168.100.112(192.168.100.112:3306) as a new master. 192.168.100.112(192.168.100.112:3306): OK: Applying all logs succeeded. 192.168.100.112(192.168.100.112:3306): OK: Activated master IP address. 192.168.100.113(192.168.100.113:3306): OK: Slave started, replicating from 192.168.100.112(192.168.100.112:3306) 192.168.100.112(192.168.100.112:3306): Resetting slave info succeeded. Master failover to 192.168.100.112(192.168.100.112:3306) completed successfully.

----结束

#### 故曈恢复

步骤1 在旧主数据库上重新启动MySQL服务,将其作为从数据库加入集群(注意主数据库IP 已更新)。

systemctl start mysqld.service mysql -uroot > CHANGE MASTER TO MASTER HOST='192.168.100.112', MASTER\_USER='repl', MASTER PASSWORD='密码', MASTER\_PORT=3306, MASTER\_CONNECT\_RETRY=10, MASTER\_AUTO\_POSITION=1; > START SLAVE; > SHOW SLAVE STATUS\G;

#### 步骤2 修改MHA Manager配置文件,将旧主数据库加入集群。

vim /datadisk/mha/conf/app1.cnf [server1] candidate\_master=1 check\_repl\_delay=0 hostname=192.168.100.111 port=3306

#### 步骤3 重新启动MHA服务。

mha\_app1\_start mha\_app1\_status

----结束

## 手动切换

手动切换主数据库,必须先停止MHA服务:

mha\_app1\_stop

#### 然后在MHA Manager上运行以下命令,进行手动在线切换主从数据库:

masterha\_master\_switch --conf=/datadisk/mha/conf/app1.cnf --master\_state=alive -new\_master\_host=192.168.100.111 --orig\_master\_is\_new\_slave --running\_updates\_limit=10000 -interactive=0

出现-- Switching master to 192.168.0.111(192.168.0.111:3306) completed successfully. 代表切换成功

**图 3-43** 手动在线切换

**************						
Enabling the VIP - 192.168.100.99/24 on new master: 192.168.100.111						
Enabled the VIP successfully						
Thu sep 1 11:52:11 2022 - [info] ok.						
Thu Sep 1 11:52:11 2022 [unto] Thu Sep 1 11:52:11 2022 [unto] * Switching slaves in parallel						
Thu Sap 1 11:52:11 2022 - [unit] - Slave switch on host 192.168.100.113(192.168.100.113:3306) started, pid: 15196 Thu Sap 1 11:52:11 2022 - [unit]						
Thu Sap 1 11:52:13 2022 - [unf5] Log messages from 192.168.100.113 Thu Sap 1 11:52:13 2022 - [unf5]						
Thu Sep 1 11:52:11 2022 - [unf0] Waiting to execute all relay logs on 192.168.100.1313(2).168.100.1313386) Thu Sep 1 11:52:11 2022 - [unf0] majeter_pos_wait(majed_bin.0000051:04) completed on 192.168.100.1131(12).168.100.1131(32).68.100.100.1131(32).68.100.1131(32).68.100.1131(32).68.100.1131(32).68.100.1131(32).68.100.1100.1100.1100.1100.1100.1100.11						
Thu Sep 1 11:52:11 2022 [ Info] done. Thu Sep 1 11:52:11 2022 [ Info] done. Thu Sep 1 11:52:11 2022 [ Info] Meesting Maye 192:168.100.113(192.168.100.113:3306) and starting replication from the new master 192.168.100.111(192.168.100.111:3306).						
nu sep 1 1152:11 2022 - [unio] Executed Chanke review. Thu sep 1 1152:11 2022 - [unio] Executed Chanke review. Thu sep 1 1152:12 2022 - [unio] Executed Chanke from 100 182 100 113						
thu sop 1 11:52:13 2022 - [unfo] - Elaw switch on host 102.168.100.113(102.168.100.113:3306) succeeded.						
Thu Sap 1 11:52:13 2022 : [unfo] functing MLCK TABLES Thu Sap 1 11:52:13 2022 : [unfo] functing MLCK TABLES						
Thu Sep 1 11:52:13 2022 : [unfo] ok. Thu Sep 1 11:52:13 2022 : [unfo] Starting orig master as a new slave						
Thu Sep 1 11:52:13 2022 - [unfo] Resetting slawe 102.168.100.112(102.168.100.112:3306) and starting replication from the new master 192.168.100.111(192.168.100.111:3306) Thu Sep 1 11:52:13 2022 - [unfo] Resetting Slawe 102.168.100.112(192.168.100.112:3306) and starting replication from the new master 192.168.100.111(192.168.100.111:3306)						
Thu sep 1 11:32:14 2022 [Info] Slave started. Thu sep 1 11:32:14 2022 [Info] All new Slave servers switched successfully.						
nu sap 1 11:2:41 2022 [ufi6] * Phase 5: New master cleanup phase						
Thu Sep 1 11:52:14 2022 - 1076 - 107						
[root@mha-mysql-slave2 ~]# ]						

在新的主数据库(192.168.100.111)查看VIP漂移成功

ifconfig

在MHA Manager服务器上开启MHA服务即可。

mha\_app1\_start mha\_app1\_status

## 3.4 快速卸载

## 一键卸载

**步骤1** 登录资源编排 RFS资源栈,找到该解决方案创建的资源栈,单击资源栈名称最右侧 "删除"按钮,在弹出的"删除资源栈"提示框输入"Delete",单击"确定"进行 解决方案卸载。

#### 图 3-44 删除资源栈

资	源栈 ②	删除资源栈				~		▶ 使用指南	立即创建资源代
		您确定要删除该资源栈	及资源栈内资源吗?删除后不能快	夏,请谨慎操作		- 1			
		资源栈名称	状态	创建时间			<ul> <li>默认按照资源线名称搜索</li> </ul>		Q 🕲 C
	资源栈名称/ID	deploy-a-highly-availa	able-mha-my 部驟成功	2024/07/1	6 11:03:14 GMT+08:00		更新时间 1三	操作	
	deploy-a-highly-available-mha-mysql-clus d15d2d50_0bd3_44ea_8tc1_b7296dt2eed8	资源列表 (14)					2024/07/16 11:09:46 GMT+08:00	删除 更新	
		云产品名称	物理资源名称/ID		资源状态				
		弹性云服务器	highly-available-mha-mysql-clus bf7d	ster-demo 804cc	生成完成	i			
		弹性云服务器	highly-available-mha-mysol-clus a32	ter-demo 73972	生成完成				
4		弹性云服务器	highly-available-mha-mysql-clus 5a36	ster-demo If2cae	生成完成				
		弹性云服务器	highly-available-mha-mysgl-clus b4c2	ster-demo-sg 3f545	生成完成				
		虚拟私有云	highly-available-mha-mysql-clus dbfa	ster-demo 21044	生成完成				
		虚拟私有云 删除方式 💿 删除药		(4fb1	牛成宗成	•			
		如您确认要删除资源栈	或其资源,请输入Delete以确认删除	ŧ		_			
		Delete							
			मोद्धेः मिर	消					



## 名词解释

- 华为云Flexus云服务器X实例: Flexus云服务器X实例是新一代面向中小企业和开 发者打造的柔性算力云服务器。Flexus云服务器X实例功能接近ECS, 同时还具备 独有特点,例如Flexus云服务器X实例具有更灵活的vCPU内存配比、支持热变配 不中断业务变更规格、支持性能模式等。
- 弹性云服务器 ECS: 是一种可随时自助获取、可弹性伸缩的云服务器,可帮助您 打造可靠、安全、灵活、高效的应用环境,确保服务持久稳定运行,提升运维效 率。
- 云服务器组:通过云服务器组功能,云服务器在创建时,将尽量分散地创建在不同的主机上,提高业务的可靠性。支持反亲和性策略,即同一云服务器组中的云服务器分散地创建在不同的主机上,提高业务的可靠性。
- 弹性公网IP EIP:提供独立的公网IP资源,包括公网IP地址与公网出口带宽服务。可以与云服务器、裸金属服务器、虚拟VIP、弹性负载均衡、NAT网关等资源灵活地绑定及解绑。
- MHA: MHA (Master High Availability)目前在 MySQL 高可用方面是一个比较成熟的解决方案,它是由日本 DeNA 公司 Yoshinori Matsunobu发的,是一套优秀的动作集 MySQL Failover 和高可用环境下的主从提升的高可用软件。在MySQL 故障转移期间,MHA 可以在 0~30 秒内自动完成数据库故障转移操作,也在故障转移过程中,MHA 很大程度地保证数据的一致性,实现真正的高可用。MHA 中有两个字符之一是 MHA Node (数据节点),另一个是 MHA Manager (管理节点)。MHA Manager 可以单独部署在单机上管理多个主从集群,也可以部署在一个从节点上。MHA Node 运行在每个 MySQL Server 上,MHA Manager 会检测到 master 节点,当 master 失败的时候,它会自动更新 slave的数据升级到一个新的 master,然后把所有其他 slave 点放回新的 master。整个故障转移过程对于应用程序来说是完全透明的。



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2023-04-30	第一次正式发布。
2024-07-30	支持华为云Flexus云服务器X实例。