Monday, January 9, 2017

当与其他RAC节点的私有网络断开时，CRS无法启动问题

这篇文章

>症状

>原因

>解决

>参考

>适用于

Oracle Database - Enterprise Edition - Version 11.2.0.1 and later

Information in this document applies to any platform.

>症状

CRS无法启动，当在其他节点拔掉网线后（测试环境）

Command 'crsctl stat res -t -init' shows gpnpd is OFFLINE

......

ora.cluster\_interconnect.haip

???? 1??????? ONLINE? OFFLINE?????????????????????????????? STABLE

ora.cssd

???? 1??????? ONLINE? OFFLINE?????????????????????????????? STABLE

ora.gipcd

???? 1??????? ONLINE? OFFLINE?????????????????????????????? STABLE

ora.gpnpd

???? 1??????? ONLINE? OFFLINE?????????????????????????????? STABLE

......

The GPNPD log (<Grid Infrastructure home>/log/<node>/gpnpd/gpnpd.log) shows:

2015-02-18 11:10:29.725: [??? GPNP][1]clsgpnpd\_lFilterIpTypes: [at clsgpnpd.c:1593]?? - net4/192.8.1.0 cluster\_interconnect (ip=,mask=,mac=,typ=1)

2015-02-18 11:10:29.725: [??? GPNP][1]clsgpnpd\_lFilterIpTypes: [at clsgpnpd.c:1614]?? of 3 net interfaces, 1 publics (1 ipv4, 0 ipv6), 2 privates (2 ipv4, 0 ipv6).

2015-02-18 11:10:29.735: [??? GPNP][1]clsgpnpd\_lCheckIpTypes: [at clsgpnpd.c:1729] GPnP Node Network Interfaces - 1 total

2015-02-18 11:10:29.735: [??? GPNP][1]clsgpnpd\_lFilterIpTypes: [at clsgpnpd.c:1593]?? - net2/172.10.255.0 public (ip=172.10.255.103,mask=255.255.255.0,mac=00-21-28-69-10-36,typ=1)

2015-02-18 11:10:29.735: [??? GPNP][1]clsgpnpd\_lFilterIpTypes: [at clsgpnpd.c:1614]?? of 1 net interfaces, 1 publics (1 ipv4, 0 ipv6), 0 privates (0 ipv4, 0 ipv6).

2015-02-18 11:10:29.735: [??? GPNP][1]clsgpnpd\_lCheckIpTypes: [at clsgpnpd.c:1747] (:GPNPD00123:) Fatal: No private GPnP network interfaces found on node. Check network setup.

2015-02-18 11:10:29.735: [??? GPNP][1]clsgpnpd\_term: [at clsgpnpd.c:1187] STOP GPnPD terminating. Closing connections...

2015-02-18 11:10:29.738: [ CLSCEVT][1](:CLSCE0024:)clsce\_unsubscribe 100d071d0 not currently subscribed

2015-02-18 11:10:29.739: [ CLSCEVT][1](:CLSCE0024:)clsce\_unsubscribe 100d071d0 not currently subscribed

2015-02-18 11:10:29.739: [ default][1]clsce\_term 100d071d0 context terminated

2015-02-18 11:10:29.739: [ default][1]clsgpnpd\_term STOP terminating.

2015-02-18 11:10:29.739: [??? GPNP][1]clsgpnp\_Term: [at clsgpnp0.c:1346] GPnP cli=gpnp

检查网络 通过mos文章 How to Validate Network and Name Resolution Setup for the Clusterware and RAC (Doc ID 1054902.1)

RAC私有网络使用的是UDP协议，可用以下命令检查私有网络

/bin/traceroute -s 10.0.0.1 -r -F 10.0.0.2 1472

>原因

私有网络使用的交叉线直连的方式导致

>解决

私有网络不支持使用交叉线直连，请使用交换机

oracle官方文档已经指出不支持交叉线直连

<http://docs.oracle.com/cd/E11882_01/install.112/e41961/prelinux.htm#CWLIN209>

注意：

Oracle RAC 绝大部分使用UDP作为默认通信协议,Oracle Clusterware绝大部分使用TCP作为默认协议. 必须使用交换机互相连接. 而且oracle建议各自使用单独的交换机

Oracle 不支持 环路连接或交叉线直连的方式

>参考

NOTE:787420.1 - Cluster Interconnect in Oracle 10g and 11gR1 RAC

NOTE:1050908.1 - Troubleshoot Grid Infrastructure Startup Issues

NOTE:1054902.1 - How to Validate Network and Name Resolution Setup for the Clusterware and RAC

其他：

在11gr2中交叉线直连的方式不受支持

RAC: Frequently Asked Questions (RAC FAQ) (Doc ID 220970.1)详细描述了为什么不受支持

原因：

1) 交叉线直线限制两节点RAC的可扩展性

2) 交叉线直连不稳定:

a) 一些网卡不能正常工作. They are not able to negotiate the DTE/DCE clocking, and will thus not function. These NICS were made cheaper by assuming that the switch was going to have the clock. Unfortunately there is no way to know which NICs do not have that clock.

b) 各种操作系统（ 特别是windows）当一端线缆被拔掉时将会引起网卡停止工作， 这个问题还会引起集群的不稳定导致ORA-29740 errors (节点驱逐).

基于以上原因，交换机是oracle唯一支持的互联方式

但是交叉线直连的方式不会影响正常的安装. 使用交叉线直线的方式，也可以正常的安装和运行