Informação do temporizador PGW2200 Softswitch RLM

Índice

Introdução

Este original fornece uma visão geral ampla e configurações de amostra do Redundant Link Manager (RLM) usado em Cisco PGW2200 sinalizando o modo. A informação é fornecida igualmente em pesquisar defeitos a sinalização RLM e a sinalização ISDN entre o gateway do servidor do acesso de rede (NAS) e Cisco PGW2200.

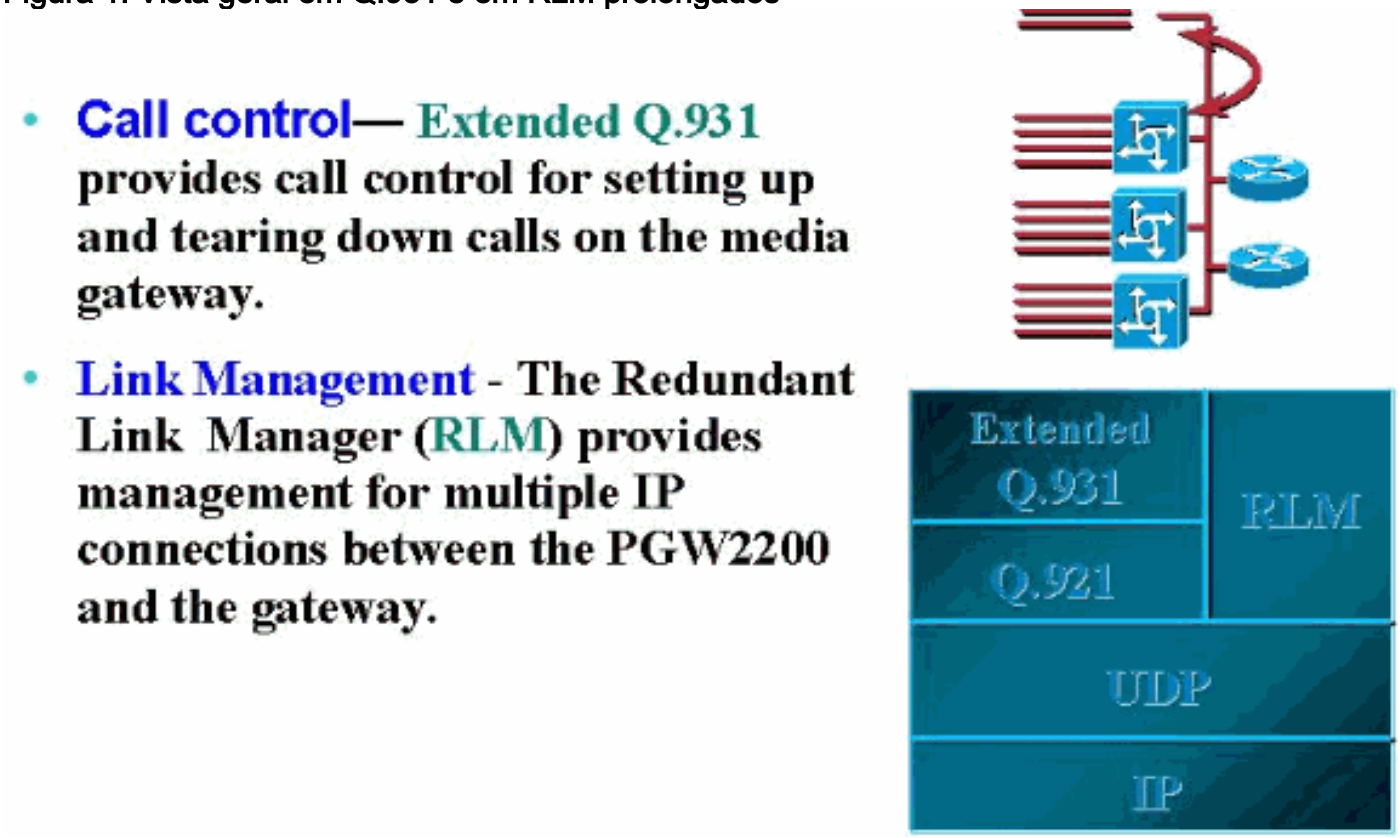
O RLM fornece o Gerenciamento do enlace virtual sobre redes IP múltiplas de modo que o protocolo de sinalização de Cisco Q.931+ possa ser transportado sobre enlaces redundantes múltiplos entre o NAS de Cisco PGW2200 e de Cisco.

O RLM fornece:

- **Um relacionamento cliente/servidor** — O NAS RLM é sempre o cliente e comuta uma relação quando uma falha é detectada.
- **Mecanismo de polling** — Envia periodicamente “olá!” em todos os links configurados para assegurar a Disponibilidade.
- **Mantenha a integridade do link** — As mensagens do controle são para fora--proibição trocada no mesmo par de endereço IP. Contudo, as portas diferentes UDP são usadas.
- Conexões IP redundantes.

- A mensagem orientou o serviço.
- Confiança e desempenho.

Figura 1: Vista geral em Q.931 e em RLM prolongados



Pré-requisitos

Requisitos

A Cisco recomenda que você tenha conhecimento destes tópicos:

- Gerenciador de link redundante
- Configuração RLM
- Documentação da liberação 9 de Cisco Media Gateway Controller Software

Componentes Utilizados

A informação neste documento é baseada no Software Release 9.x de Cisco PGW2200.

Nota: Os detalhes RLM são parte de versão 7.4(11) e 7.4(12) de Cisco PGW2200. Contudo, este original fornece somente diretrizes para a liberação 9.x de Cisco PGW2200.

As informações neste documento foram criadas a partir de dispositivos em um ambiente de laboratório específico. Todos os dispositivos utilizados neste documento foram iniciados com uma configuração (padrão) inicial. Se a sua rede estiver ativa, certifique-se de que entende o impacto potencial de qualquer comando.

Convenções

Consulte as Convenções de Dicas Técnicas da Cisco para obter mais informações sobre convenções de documentos.

Informação do temporizador RLM

Um grupo RLM é configurado em um gateway e dois Cisco PGW2200 são configurados dentro do grupo RLM. Um tem o IP address e a porta UDP para Cisco ativo PGW2200 e o outro tem o IP address e a porta UDP de Cisco à espera PGW2200 (veja figura 2).

Cada server no grupo RLM é apoiado por dois canais UDP em portas diferentes UDP. Um canal UDP (porta 3000) transporta o protocolo RLM e o outro canal UDP (porta 3001) transporta o protocolo Q.921.

- O objetivo do RLM é isolar as camadas da sinalização de chamada da natureza indeterminada do comportamento de rede associada tipicamente com as redes baseada em IP. O RLM mantém vários enlaces virtuais entre Cisco PGW2200 e o NAS remoto e monitora continuamente o estado da relação para determinar se os frames enviado supuserem um trajeto alternativo.
- Desde que cada grupo diferente RLM exige o emperramento a um controlador de canal de Cisco PGW2200 (IOCC) (uma porta específica UDP exigida para cada um), os IOCC múltiplos são exigidos para apoiar esta configuração. Embora Cisco PGW2200 possa apoiar o protocolo de internet da relação de até oito taxas principal (PRIIP) IOCC, cada um com a capacidade para 32 gateways (RLM) ou cada Cisco PGW2200 IOCC (PRIIP) apoia 32 gateways (RLM). Isto significa que em Cisco PGW2200, você tem as portas 3001, 3003, e 3005 a 3015. Use o **netstat - a do** comando unix **| grep 30** para verificar isto em Cisco PGW2200.

Informação do arquivo XECfgParm.dat sob o diretório /opt/CiscoMGC/etc:

- *.maxNumLinks = 32
- *.maxNumRLMPorts = 8 # número máximo de portas originais RLM

O PGW2200 apoia um máximo de oito processos do controlador de canal PRI. Estes processos são criados quando você configura o PGW2200. Por exemplo, você usa a porta 3000 e 3001 em sua configuração IOS®/PGW2200 de Cisco, para o RLM e o ISDN. Isto cria um IOCC para PRI (NI+). Consequentemente, cada vez que você usa uma porta diferente um outro processo é criado.

Cada processo apoia até 32 gateways. Se você usa um RLM pelo gateway, a seguir você pode ter os gateways 256. Mas quando você tem quatro RLM pelo gateway para o roteamento de tráfego, a seguir você é deixado com uma capacidade de 64 gateways física.

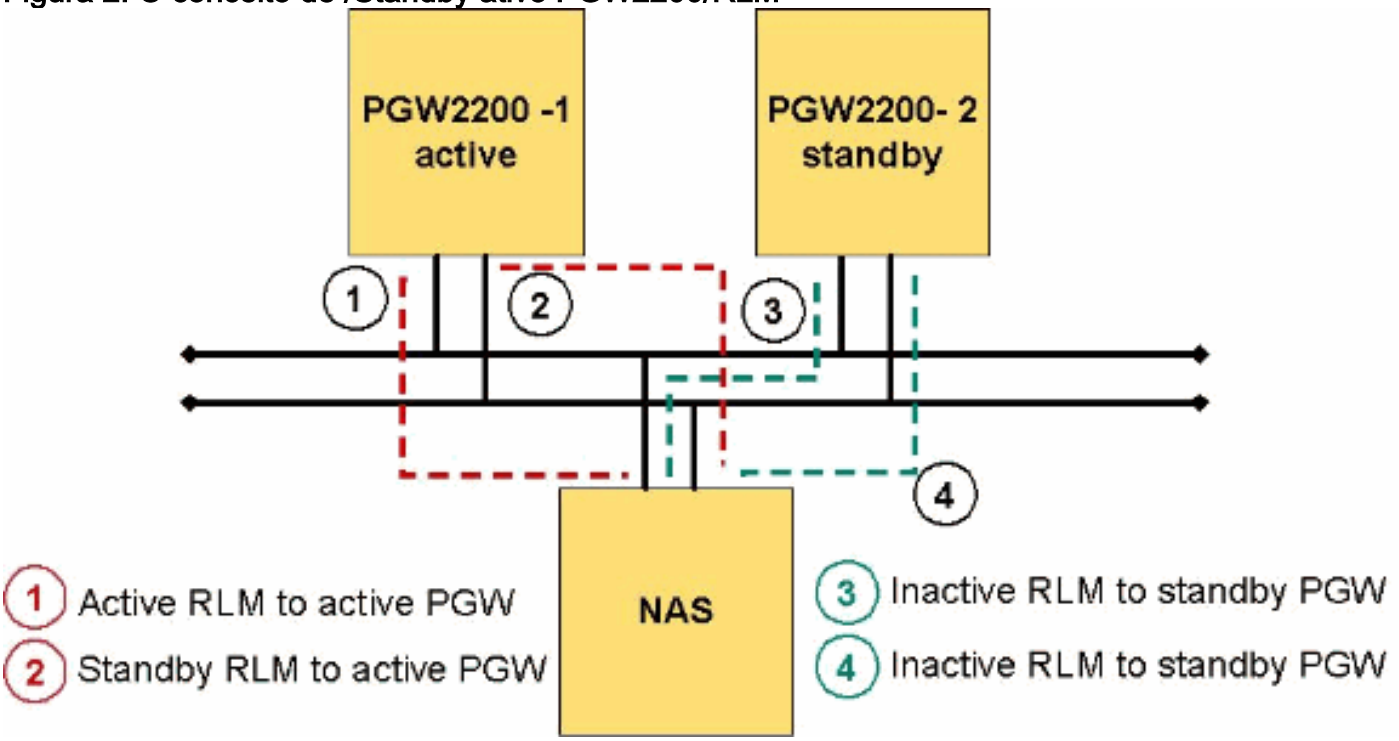
Nota: O uso IUA é apoiado a liberação de 9.4 de Cisco PGW2200 ou de mais atrasado. O apoio para o IUA com SCTP é limitado porque o RLM tem limitações em termos da escamação para apoiar um grande número grupos NFAS pelo gateway de mídia. Refira o apoio para o IUA com SCTP para mais informações.

Nota: Não mude este valor. Também, esteja ciente que como você aumenta as sessões de RLM você se usa por Cisco PGW2200, menos gateways que totais você pode apoiar. Por exemplo, um RLM apoia um total dos gateways 256 por Cisco PGW2200, dois RLM apoia um total dos gateways 128 por Cisco PGW2200, e assim por diante.

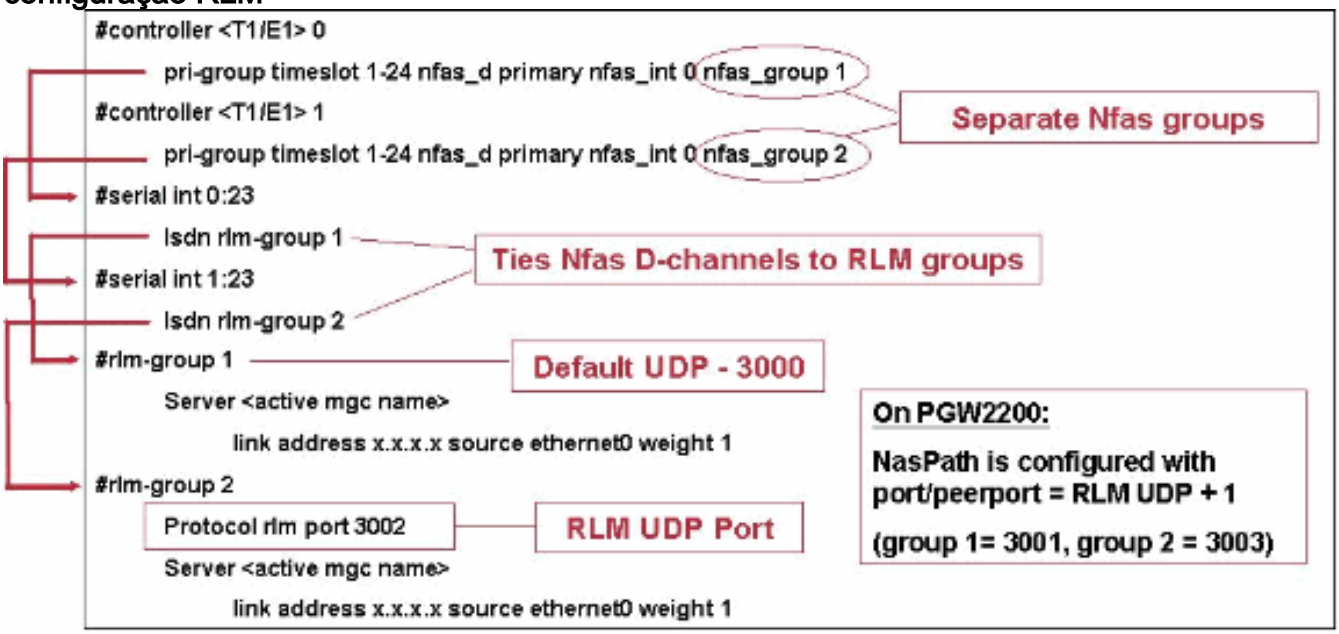
Os gateways são considerados o lado do cliente e são responsáveis para a instigação de um switchover a uma relação à espera de um mais baixo peso RLM no caso de uma falha.

Vista geral e verificação

Figura 2: O conceito de /Standby ativo PGW2200/RLM



- A porta do padrão UDP para a relação do Gerenciamento RLM é 3000.
- A porta do padrão UDP para a ligação de dados RLM é uma mais o valor do valor de porta da relação UDP do Gerenciamento RLM (por exemplo, 3001).**Figura 3: Informação de configuração RLM**

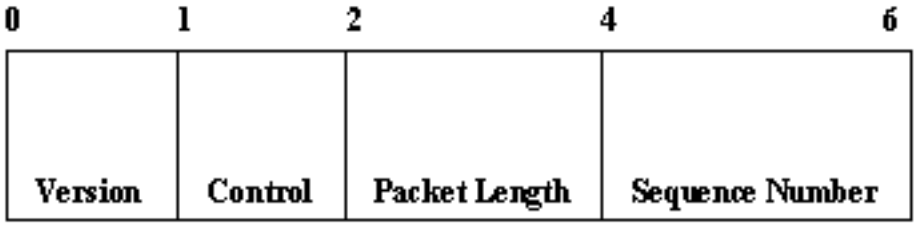


- **O grupo do rlm da mostra dos** comandos ios **x** e **soquetes IP da mostra** indica as portas UDP no uso no NAS IO.
- **O nfas_int no** controlador E1/T1 *deve* combinar o spanID na configuração do canal do portador de Cisco PGW2200. Este é um ponto chave no mapeamento do canal. É transportado no IE de ChannelID do mensagem setup Q.931 junto com o intervalo de tempo.

Como o RLM trabalha

Formato de pacote de informação e pilha de protocolos RLM

O pacote de gerenciamento da relação RLM consiste em seis bytes enquanto este diagrama mostra.



As versões suportadas atuais do RLM no PGW2200 são versão 2.0 somente.

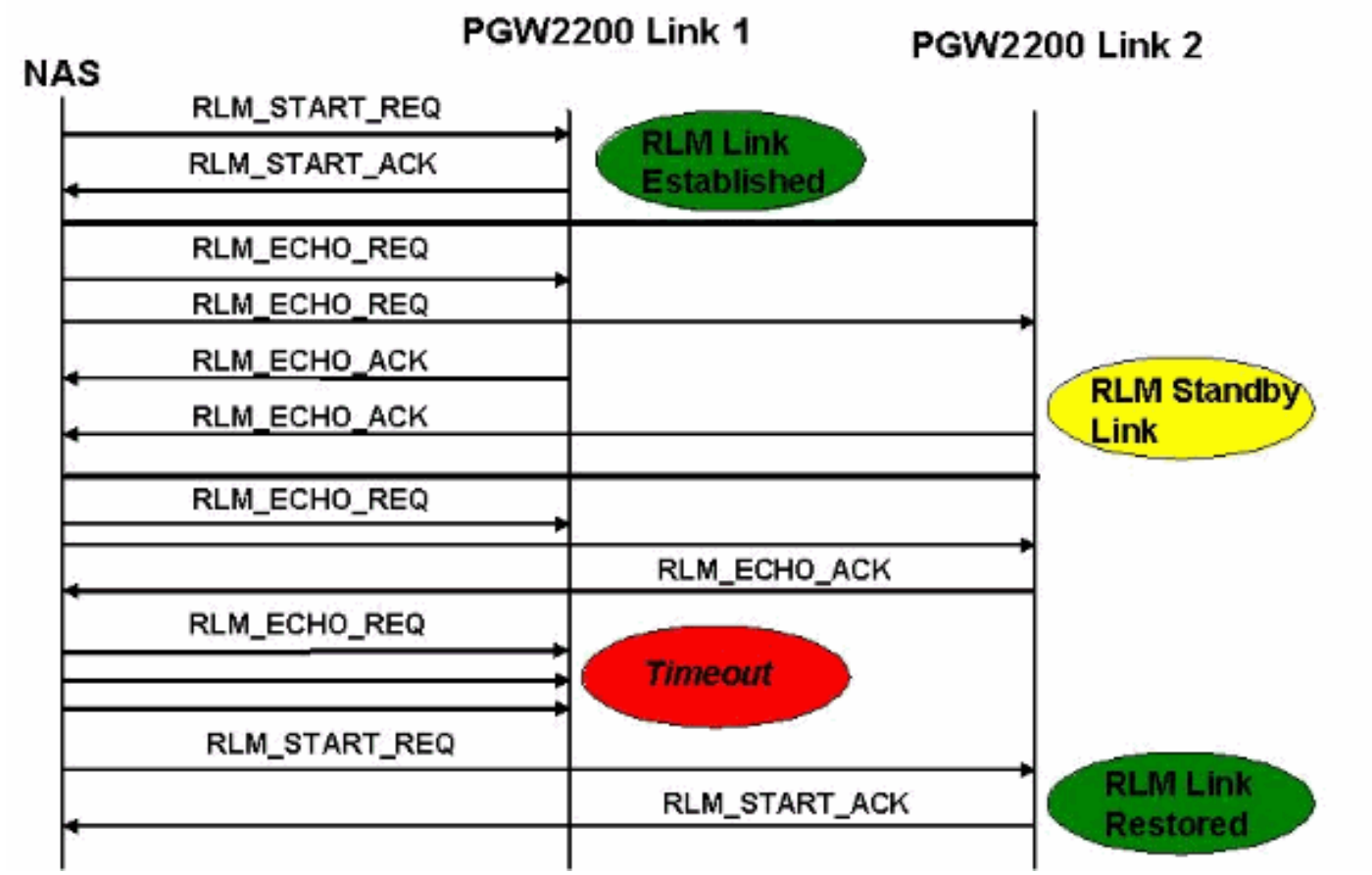
O campo de controle fornece o comando ao par. Estes são valores válidos do controle:

- **RLM_START_REQ (0x01)** — Usado para iniciar uma relação RLM. Gerado somente pelo NAS.
- **RLM_START_ACK (0x02)** — Gerado pelo PGW2200 para reconhecer o começo de uma relação RLM.
- **RLM_STOP_REQ (0x03)** — Gerado pelo PGW2200 ou pelo NAS para parar uma relação.
- **RLM_STOP_ACK (0x04)** — Reconhecimento a um pedido da parada.
- **RLM_ECHO_REQ (0x05)** — Usado pelo NAS **para sibilar** somente periodicamente o PGW2200 a fim verificar a integridade do link. Usado em um link ativo e em todos os enlaces em standby.
- **RLM_ECHO_ACK (0x06)** — Reconhecimento de uma requisição de eco.
- **RLM_SWITCH_REQ (0x07)** — Usado para comutar de uma relação ativa tornada mais pesada mais baixa RLM a uma relação disponível mais altamente tornada mais pesada.
- **RLM_SWITCH_ACK (0x08)** — Reconhecimento de uma requisição de switch.

O comprimento do pacote está a um comprimento do pacote de gerenciamento RLM (payload UDP). Para a versão 1.0 RLM, este valor é sempre 6. Para a versão 2 RLM, este valor é 8.

O número de sequência é um valor exclusivo usado para correlacionar um pedido e um reconhecimento específicos do comando.

Figura 4: Fluxo do mensagem RLM para a recuperação da relação



Em figura 4, o cliente RLM no NAS inicia um pedido a Cisco PGW2200 começar uma sessão de RLM. Supõe que o NAS está configurado para dar à primeira relação uma prioridade mais alta. Depois que Cisco PGW2200 reconhece o pedido do começo, a relação está considerada disponível e os pacotes de dados podem ser enviados na porta dos dados UDP. A segunda relação é colocada em um modo standby. O RLM envia periodicamente as requisições de eco a todas as relações configuradas RLM em um grupo dado RLM. O intervalo padrão é 1 segundo.

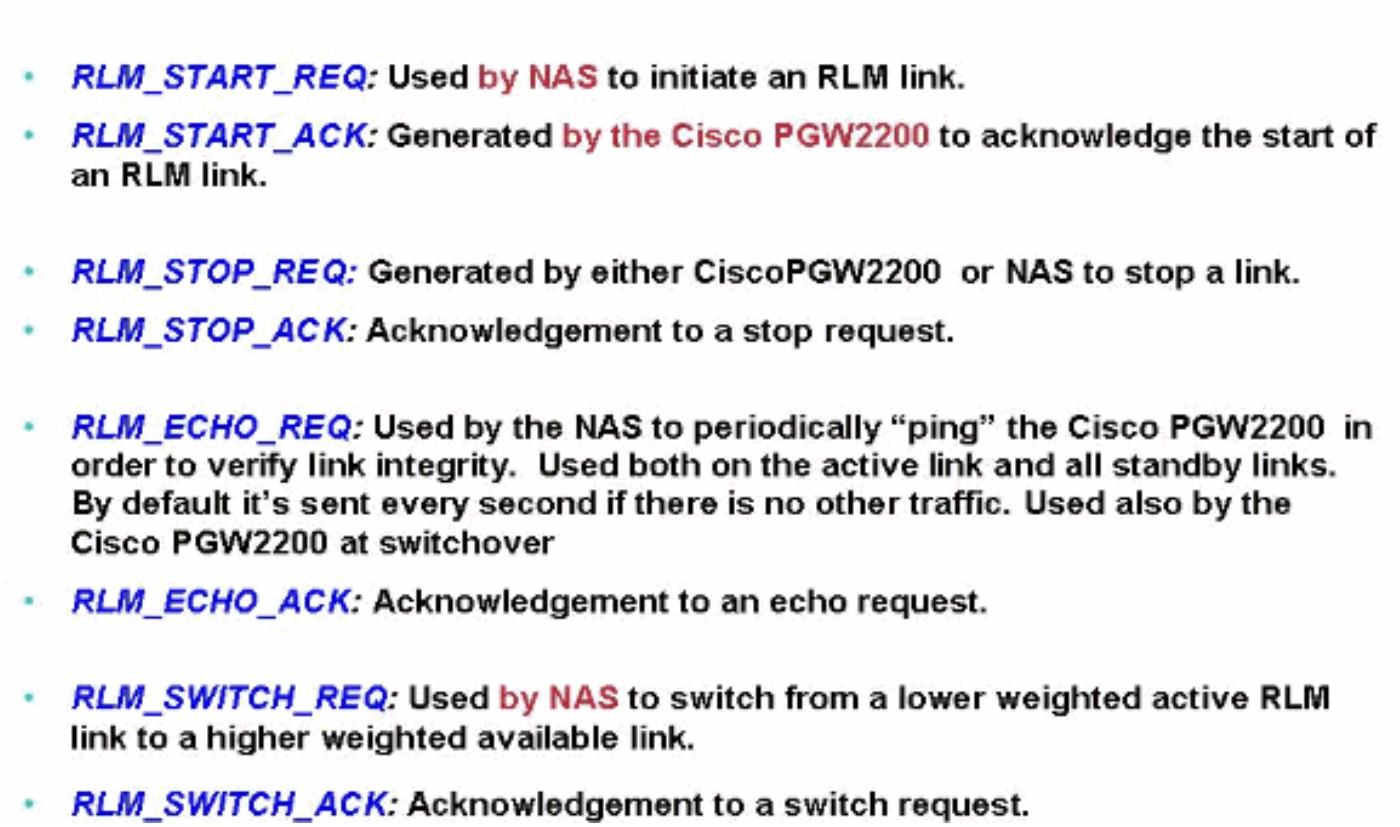
Com respeito às questões de timeout em figura 4, se o link ativo não recebe uma resposta a uma das requisições de eco RLM, tenta experimentar de novo o pedido (o valor padrão é três tentativas). Em cima da falha receber um reconhecimento, o cliente RLM inicia uma recuperação da relação enviando um pedido do começo ao enlace em standby tornado mais pesado o mais alto seguinte disponível. O cliente RLM continua a votar o link ativo anteriormente. Se uma resposta é recebida eventualmente, executa um switchover da relação de volta à relação tornada mais pesada mais alta. Se os pesos da relação são idênticos, o cliente de RLM seleciona a relação onde o começo reconhece é recebido primeiramente. Para Cisco à espera PGW2200, o server RLM não reconhecer as requisições de eco do NAS quando no estado à espera. Uma vez o apoio transforma-se o servidor ativo e todos os estados da chamada são restaurados, os começos RLM para reconhecer os pedidos do NAS.

O comportamento do RLM é tal que o Keepalives RLM está transmitido somente quando o tráfego de sinalização não foi transmitido por algum tempo. Por exemplo, o recibo de um mensagem de sinalização (por exemplo, Q.921) tem o efeito de restaurar o temporizador de keepalive RLM. Note igualmente que o Keepalives RLM está transmitido somente pelo NAS. Cisco PGW2200 responde somente aos pedidos do keepalive RLM. Contudo, se o temporizador de keepalive RLM expira em Cisco PGW2200, derruba a relação. Aumentar os valores do temporizador de keepalive RLM em ambos os lados (PGW2200 e NAS) assegura-se de que a relação RLM não esteja restaurada durante condições transitórias na rede IP durante que o valor do temporizador de keepalive do padrão RLM pode ser demasiado estrito. Para único Cisco PGW2200, não há nenhuma pena para fazer isto. Com dois Cisco PGW2200 em uma configuração do Failover, há

umas trocas entre a evitação de aletas na relação RLM e rapidamente a detecção de uma falha do link. Com o RLM, os temporizadores de keepalive e os temporizadores Q.921/Q.931 aumentados.

Quando você olhar os mensagens de informação do controle RLM (veja a figura 5), o campo de controle fornece o comando ao par. Os valores na figura 5 são valores válidos do controle:

Figura 5: Informação de mensagem RLM



Mude temporizadores RLM no NAS e no Cisco PGW2200

Esta seção é projetada preservar atendimentos estáveis durante o Failover de Cisco PGW2200 ou sob circunstâncias da instabilidade transiente da rede IP. Estas mudanças asseguram-se de que os atendimentos estejam retidos a menos que houver uma perda prolongada de Conectividade RLM. A perda de Conectividade RLM significa que não há nenhuma relação disponível para levar o tráfego de sinalização entre o NAS e Cisco ativo PGW2200. A perda de um link único é segurada pela camada RLM transparentemente à pilha ISDN.

Com o **comando show rlm group <x> no** NAS IO, você pode verificar os temporizadores do RLM.

Tabela 1: Valores de temporizador padrão RLM no NAS do Cisco IOS

Cronômetro	Duração
Abra a espera	3 segundos
Recuperação	12 segundos
Mínimo até	60 segundos
Keepalive	1 segundo
De força desativado	30 segundos
Interruptor-relação	segundos 5

Retransmita	1 segundo

- O tempo de força desativado precisa de ser mais longo do que o tempo total do keepalive (período de keepalive * novas tentativas) mais o tempo de recuperação. Por exemplo, veja esta fórmula:de força desativado > (Keepalive * Retries) + recuperação à revelia as novas tentativas = 3 vezesPara este exemplo, 30 > (1 * 3) + 12Se o de força desativado e o temporizador de keepalive têm o mesmo valor, a seguir o NAS IO não pode reconhecer que a relação está restaurada porque o keepalive é superior ou igual ao tempo ocioso da máquina da força.
- **Temporizador de keepalive** — O NAS IO envia a ECHO_REQ cada 1 segundo. Depois que três perderam o ECHO_REQ, o NAS pensa que a relação pôde estar para baixo e liga um temporizador de recuperação (12 segundos). Contudo, continua a enviar o ECHO_REQ que espera que a relação pôde vir apoio. Pague a atenção a isto em umas versões do Cisco IOS mais velhas, os temporizadores de recuperação nos valores padrão são demasiado longo. Havia os exemplos onde a relação RLM poderia ser tomada para baixo. O melhor artigo é verificar estes temporizadores em ambos os sistemas. Durante a partida/parada programada de Cisco à espera PGW2200, o active Cisco PGW2200 é atrasado em sua resposta ao ECHO_REQ do NAS IO. Depois que três tentativas do NAS IO, cada um com um padrão do intervalo do segundo, o NAS IO derrubam a relação RLM. Aumentando o temporizador de keepalive de 1 segundo aos segundos 10, é possível manter acima o RLM ativo. Esta maneira, o NAS IO espera mais por muito tempo após cada ECHO_REQ antes de cronometrar para fora e de tentar outra vez. Com um keepalive 10 segundo, o NAS IO pode esperar 30 segundos antes de cronometrar para fora e de trazer abaixo da relação RLM. Contudo, nesta instância, se você muda os temporizadores de keepalive, você precisa de tomar também a atenção no temporizador de força desativado.
- **Temporizador de recuperação** — Se você quer reduzir o temporizador de recuperação, derrube a relação ativa RLM rapidamente antes que Cisco PGW2200 reinicie. Isto é feito configurando o temporizador de keepalive e o temporizador de força desativado no mesmos valor. Consequentemente, quando o NAS IO é recarregado e volta, o NAS remoto IO não pode reconhecer que a relação está restaurada porque o keepalive é superior ou igual ao tempo de força desativado. O tempo de força desativado precisa de ser maior do que o tempo total do keepalive (período de keepalive * novas tentativas) mais o tempo de recuperação. A correção é que o temporizador de força desativado deve ser maiores então três épocas o keepalive mais o temporizador de recuperação.
- **Temporizador de força desativado** — De acordo com a especificação, o RLM permanece no estado da recuperação por aproximadamente 15 segundos (número de ECHO_REQ cada 1 segundo mais a recuperação cada 12 segundos). Se a relação não volta dentro desse tempo de frame, o estado RLM vai ao estado inativo e está forçado para ficar para baixo por 30 segundos como um padrão para evitar o efeito do tênis de mesa. Após isso, começa a mandar o Keepalives. Ambo o cliente e servidor atravessa este ciclo aproximadamente ao mesmo tempo. Quando o estado RLM vai da QUIETUDE a PARA BAIXO, não há nenhuma necessidade de forçar para baixo o estado desde que está já no estado inativo. Isto significa que quando as relações dos Ethernet/fasts Ethernet são desligadas, o cliente de RLM no NAS IO tenta restaurar a relação por um período definido pelo temporizador de recuperação (o valor padrão iguala 12 segundos). Se não é bem sucedido, há um temporizador de força desativado (o valor padrão iguala 30 segundos) que impeça que o cliente de RLM responda mesmo se as ligações de Ethernet estão acima. Somente depois que o temporizador de força desativado expira, o cliente de RLM começa a estabelecer as relações com Cisco PGW2200.

Neste caso você pode ter um atraso de 42 segundos (a combinação de recuperação e de temporizador de força desativado [12 + 30 = 42 segundos]).**Tabela 2:** Valores de temporizador padrão RLM nos valores de Cisco PGW2200 properties.dat. O [*]é os valores de propriedades que são suprimidos 9.3(2) na liberação de Cisco PGW2200.**Nota:** Quando você altera temporizadores, os temporizadores combinados mal entre Cisco PGW2200 e o NAS podem ser difíceis de diagnosticar. Consequentemente, como uma matéria operacional, recomenda-se que as configurações padrão estejam usadas a menos que houver uma razão forçada as mudar.

ISDN Q.921 e Q.931+

O PGW2200 é exigido para fornecer conexões ISDN Q.921 e NI-2 Q.931 sobre enlaces IP redundantes aos vários gateways NAS remotos de Cisco. Estes enlaces IP redundantes são mantidos pelo RLM. Assim, todos os intervalos de tempo nas relações da multiplexação de divisão de tempo (TDM) (troncos IMT) essa corrida no NAS contêm somente os canais do portador. A sinalização ISDN é levada através dos enlaces IP do PGW2200 aos gateways NAS. Cada conexão da sinalização consiste em um par de enlaces IP redundantes entre o PGW2200 e o NAS. Pode haver umas ou várias conexões da sinalização em cada NAS. Cada conexão da sinalização controla exclusivamente um grupo de relações NAS TDM como um grupo do Non-facility Associated Signaling (NFAS).

Com sinalização ISDN tradicional, cada circuito ISDN PRI tem um intervalo de tempo (canal D) usado para levar a sinalização. Contudo, com ISDN NFAS PRI, a sinalização é levada em um único canal D para todas as relações PRI no grupo NFAS. Isto reduz o número de circuitos de sinalização necessários para que os canais do portador extra das linhas e dos rendimentos PRI sejam usados para dados, Voz, ou vídeo. É opcional ter um canal D alternativo em uma outra relação se a interface principal for fora de serviço. Na solução de interconexão SS7 de Cisco para o servidor de acesso e o gateway de voz, a característica do ISDN NFAS é usada. Contudo, com a aplicação SS7, o canal da sinalização ISDN (canal D) é livrado acima da relação PRI e reorientado a uma outra porta (Ethernet, Fast Ethernet ou série). Consequentemente, todos os intervalos de tempo PRI não contêm somente os canais do portador e a nenhuma sinalização.

Algum do realce dos recursos adicionados feito ao protocolo NI-2 é:

- Teste de continuidade SS7 (COT)
- **Mensagem de serviço do canal único** — Relata o estado do serviço (É ou o OOS) para um único canal do portador.
- **Mensagem de serviço do grupo** — Relata o estado do serviço para todos os canais do portador para umas ou várias relações T1/E1.
- **Sincronização e Re-sincronização** — Pontos de verificação os estados da chamada entre o PGW2200 e os gateways NAS. Estas mensagens são geradas tipicamente depois que um interruptor sobre o evento para determinar se alguma discrepância ocorreu nos estados da chamada.

Configurar

Esta seção apresenta informações para configurar as características que este documento descreve.

Nota: Use a Command Lookup Tool (apenas para clientes registrados) para obter informações adicionais sobre os comandos que este documento usa.

A configuração no gateway NAS é simples. Cada gateway NAS tem uns ou vários grupos RLM definidos. Dentro do grupo RLM, e se o PGW2200 reage do modo redundante, há dois grupos da relação do server (um para o PGW2200 ativo e outro para o PGW2200 à espera). Cada grupo da relação do server pode ter uma ou dois relações que conectam ao cada um das relações dos Ethernet PGW2200 (E0 e/ou E1). O gateway NAS pode usar qualquer uma de suas relações (laço de retorno, Ethernet, ou Fast Ethernet) como o endereço de origem para criar as relações ao PGW2200. Para a redundância direta, o gateway NAS conecta duas interfaces Ethernet a ambos os PGW2200. Um Ethernet conecta a ambo o hme0 PGW2200 relações em um VLAN. A outra interface Ethernet conecta a ambo o hme1 PGW2200 relações em um outro VLAN. Veja este diagrama para uma instalação da redundância direta.

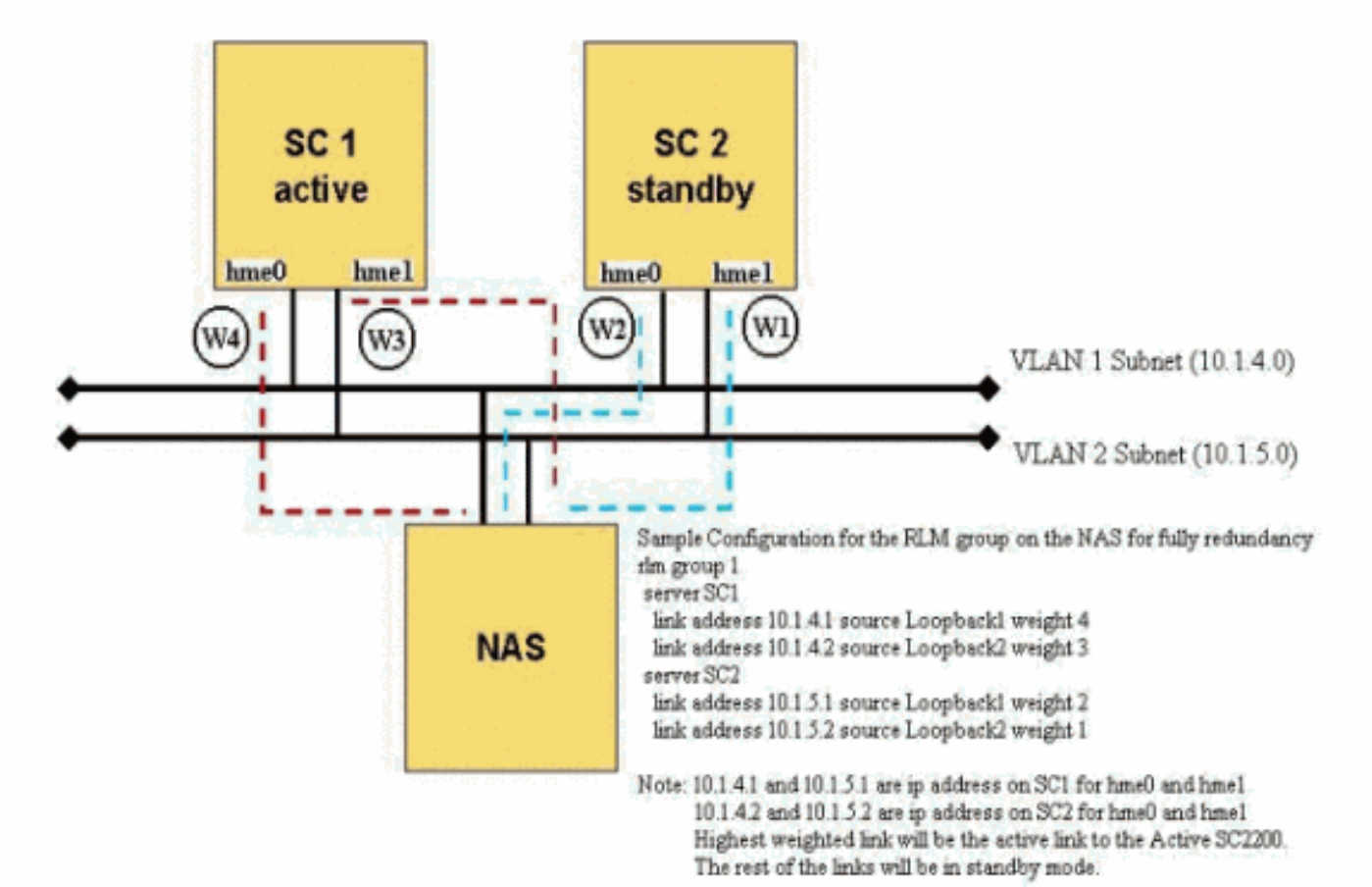
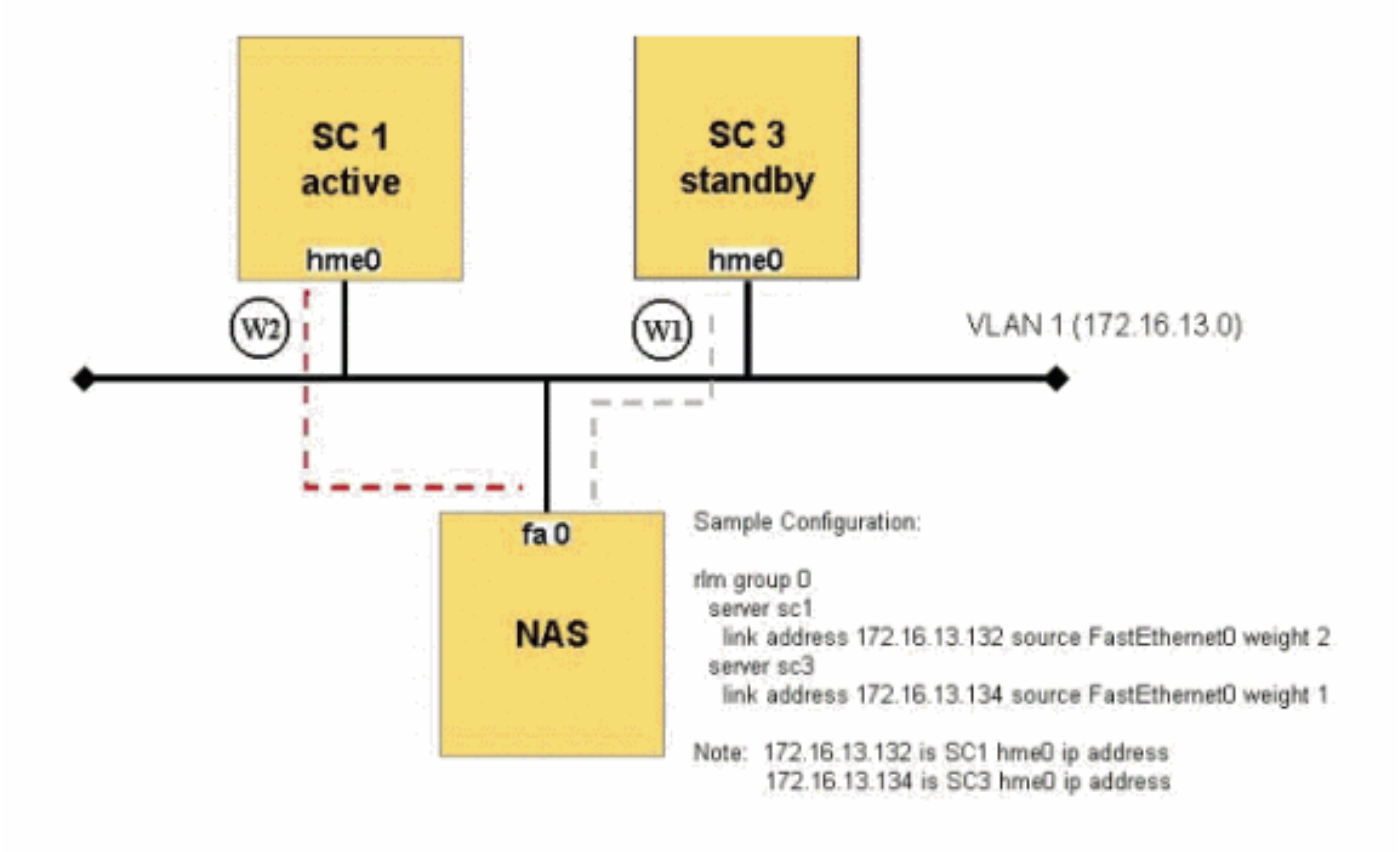


Diagrama de Rede

Este documento utiliza a seguinte configuração de rede:



Configurações

Para instruções passo a passo em como estabelecer o grupo RLM para falar com ao PGW2200, refira configurar o Gateways de mídia para a interconexão SS7 para a solução e o Redundant Link Manager (RLM) do Gateways de voz.

Este original não cobre as instruções passo a passo em como provision o PGW2200 para a interconexão SS7. Refira estes à documentação para mais informação detalhada:

- Documentação da liberação 7 do controlador do gateway do Cisco media
- Interconexão do Cisco SS7 para a solução do Gateways de voz, liberação 1.1
- A instalação & manual de configuração da liberação de software Cisco MGC 7
- Guia do abastecimento da liberação 7 de Cisco MGC

Em lugar de, este original concentra-se na área relativa ao NAS setup e à verificação e Troubleshooting da perspectiva PGW2200.

Esta é uma configuração de exemplo setup para o gateway NAS. Note que nossa instalação de laboratório não é inteiramente redundante. O gateway NAS tem somente um circuito de sinalização definido a cada um dos PGW2200.

PGW2200 no NAS
isdn switch-type primary-ni *!--- Define the switch-type to use. !--- For SS7, this must be* **primary-ni**. ! controller T1 0 framing esf

```
 clock source line primary
 linecode b8zs
pri-group timeslots 1-24 nfas_d primary nfas_int 0
nfas_group 0
!--- Configure the NFAS group 0. ! interface Serial0:23
no ip address encapsulation ppp isdn switch-type
primary-ni
!--- Define the switch-type to use. !--- For SS7, this
must be primary-ni.

isdn incoming-voice modem
isdn rlm-group 0
!--- Bind the RLM group 0 to the D-channel. !--- This
causes the ISDN signaling to go over IP instead of the
TDM D-channel. no isdn send-status-enquiry !---
Timeslot24. isdn negotiate-bchan resend-setup isdn
bchan-number-order ascending ! interface FastEthernet0
ip address 172.16.13.141 255.255.255.224 duplex auto
speed auto ! rlm group 0
!--- Define the RLM group parameters to talk with the
PGW 2200. server sc1
!--- Specify the first PGW 2200 and IP addresses used to
setup the link. link address 172.16.13.132 source
FastEthernet0 weight 2
server sc3
!--- Specify the first PGW 2200 and IP addresses used to
setup the link. LINK ADDRESS 172.16.13.134 SOURCE
FASTETHERNET0 WEIGHT 1 !
```

Verificar

Esta seção fornece informações que você pode usar para confirmar se sua configuração funciona adequadamente.

Os determinados comandos de exibição são apoiados pela ferramenta do Output Interpreter (clientes registrados somente), que permite que você ver uma análise do emissor de comando de execução.

- **mostre o grupo do rlm** — Verifica que o grupo RLM é em serviço no gateway NAS.
- **status de ISDN da mostra** — Verifica que a sinalização ISDN trabalha corretamente no gateway NAS.
- **mostre o T1 do controlador** — Verifica que todo o controlador T1/E1 é em serviço limpa no gateway NAS.
- **mostre o serviço isdn** — Verifica que todos os canais do portador estão no serviço no gateway NAS.
- **RTRV-NE** — Verifica que o PGW2200 é ascendente e ativo.
- **RTRV-softw: todos** — Verifica que todos os processos de software são executado no PGW2200.
- **RTRV-SC: todos** — Verifica que todos os circuitos de sinalização estão no serviço no PGW2200.
- **RTRV-dest: todos** — Verifica que todas as relações do destino estão no serviço no PGW2200.
- **RTRV-tc: todos** — Verifica que todos os CIC são ascendentes e inativos das perspectivas SS7 e de gateway NAS.

Verifique para ver se há estes artigos no gateway NAS:

- Certifique-se de que o grupo RLM é ascendente e é executado usando o **comando show rlm group**.
- Certifique-se dos trabalhos da sinalização ISDN que usam corretamente o **comando show isdn status**.
- Certifique-se que todo o controlador T1/E1 seja em serviço limpam usando o **comando show controller t1**.
- Certifique-se que todos os canais do portador estão no serviço usando o **comando show isdn service**.

Verifique para ver se há estes artigos no PGW2200:

- Certifique-se que o sistema é ascendente e active usando o comando mml RTRV-**NE**.
- Certifique-se que todos os processos de software estão sendo executado usando o **RTRV-softw: todo o** comando mml.
- Certifique-se que todos os circuitos de sinalização estão no serviço usando o RTRV-**SC: todo o** comando mml.
- Certifique-se que todas as relações do destino estão no serviço usando o RTRV-**dest: todo o** comando mml.
- Certifique-se que todos os CIC são ascendentes e INATIVOS do SS7 e da perspectiva do gateway NAS usando o RTRV-**tc: todo o** comando mml.

Este é exemplo de saída de comando do gateway NAS que se comunica com o PGW2200 sem erros.

```
NAS1#show rlm group 0
RLM Group 0 Status
User/Port: RLM_MGR/3000 ISDN/3001
!--- UDP port used to communicate to the PGW 2200. RLM Version : 2 Link State: Up   Last Link
Status Reported: Up
!--- RLM is up and running. Next tx TID: 1 Last rx TID: 0 Server Link Group[sc1]: Last Reported
Priority: HIGH link [172.16.13.141(FastEthernet0), 172.16.13.132] = socket[active]
!--- Link to the active PGW 2200. Server Link Group[sc3]: Last Reported Priority: LOW link
[172.16.13.141(FastEthernet0), 172.16.13.134] = socket[standby]
!--- Link to the standby PGW 2200. RLM Group 0 Timer Values open_wait = 3s force-down = 30s
recovery = 12s switch-link = 5s minimum-up = 60s retransmit = 1s keepalive  = 1s
!--- Timer for the echo sent and received. RLM Group 0 Statistics Link_up: last time occurred at
*Jan 14 10:27:23.531, total transition=1 avg=00:00:00.000, max=00:00:00.000, min=00:00:00.000,
latest=00:00:00.000 Link_down: last time occurred at *Jan 14 10:26:47.531, total transition=1
avg=00:00:36.000, max=00:00:36.000, min=00:00:00.000, latest=00:00:36.000 Link_recovered: last
time occurred at none, success=0(0%), failure=0 avg=0.000s, max=0.000s, min=0.000s,
latest=0.000s Link_switched: last time occurred at none, success=0(0%), failure=0 avg=0.000s,
max=0.000s, min=0.000s, latest=0.000s Server_changed: last time occurred at none for totally 0
times Server Link Group[sc1]: Open the link [172.16.13.141(FastEthernet0), 172.16.13.132]: last
time occurred at *Jan 14 10:27:17.531, success=1(100%), failure=0 avg=3.000s, max=3.000s,
min=0.000s, latest=3.000s Echo over link [172.16.13.141(FastEthernet0), 172.16.13.132]: last
time occurred at *Jan 14 10:30:51.531, success=204(99%), failure=1 avg=0.000s, max=0.004s,
min=0.000s, latest=0.000s Server Link Group[sc3]: Open the link [172.16.13.141(FastEthernet0),
172.16.13.134]: last time occurred at *Jan 14 10:27:17.531, success=1(100%), failure=0
avg=3.000s, max=3.000s, min=0.000s, latest=3.000s Echo over link [172.16.13.141(FastEthernet0),
172.16.13.134]: last time occurred at *Jan 14 10:30:51.531, success=212(99%), failure=1
avg=0.000s, max=0.000s, min=0.000s, latest=0.000s
```

Esta lista fornece as explicações para os temporizadores RLM.

- **open_wait = 3s** — A espera para que o pedido de conexão seja enviada e recebida sem erros.
- **de força desativado = 30s** — A hora mínima de forçar o RLM a ficar no estado inativo para certificar-se da extremidade remota detecta que o estado da relação está para baixo.

- **recuperação = 12s** — O momento de permitir que a relação recupere ao link de backup antes que você declarar a relação para baixo.
- **interruptor-relação = 5s** — O momento de detectar a falha no switch da relação.
- **mínimo até = 60s** — O momento mínimo de estabilizar a relação recentemente recuperada da preferência maior antes de comutar sobre.
- **retransmita = 1s** — O temporizador da retransmissão UDP para cada mensagem request RLM antes do pedido é enviada e recebida sem erros.
- **keepalive = 1s** — Temporizador para o eco enviado e recebido.

```
NAS1#show isdn stat
Global ISDN Switchtype = primary-ni
ISDN Serial0:23 interface  rlm-group = 0
!--- D-channel bind to rlm-group 0. dsl 0, interface ISDN Switchtype = primary-ni : Primary D-
channel of nfas group 0 Layer 1 Status: ACTIVE Layer 2 Status: TEI = 0, Ces = 1, SAPI = 0, State
= MULTIPLE_FRAME_ESTABLISHED
!--- Good. Layer 3 Status: 0 Active Layer 3 Call(s) Active dsl 0 CCBs = 0 The Free Channel Mask:
0x80FFFFFF Total Allocated ISDN CCBs = 0 NAS1#show isdn service
PRI Channel Statistics:
ISDN Se0:23 SC, Channel [1-24]
!--- Note the keyword PGW 2200. In normal ISDN, it is not there. Configured Isdn Interface (dsl)
0 Channel State (0=Idle 1=Proposed 2=Busy 3=Reserved 4=Restart 5=Maint_Pend) Channel : 1 2 3 4 5
6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 State : 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
!--- All timeslots are good and idle including timeslot 24. Service State (0=Inservice 1=Maint
2=Outofservice) Channel : 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 State : 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
NAS1#
NAS1#show controller t1
T1 0 is up.
!--- T1 is up and running clean with no errors. Applique type is Channelized T1 Cablelength is
short 133 No alarms detected. alarm-trigger is not set Version info of slot 0: HW: 4, PLD Rev: 0
Manufacture Cookie Info: EEPROM Type 0x0001, EEPROM Version 0x01, Board ID 0x42, Board Hardware
Version 1.32, Item Number 73-2217-05, Board Revision B16, Serial Number 10077744, PLD/ISP
Version 0.0, Manufacture Date 25-Sep-1998. Framing is ESF, Line Code is B8ZS, Clock Source is
Line Primary.
!--- T1 physical layer configuration. Data in current interval (429 seconds elapsed): 0 Line
Code Violations, 0 Path Code Violations 0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded
Mins 0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs, 0 Unavail Secs Total Data (last 3
15 minute intervals): 0 Line Code Violations, 0 Path Code Violations, 0 Slip Secs, 0 Fr Loss
Secs, 0 Line Err Secs, 0 Degraded Mins, 0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs,
0 Unavail Secs
```

Este é exemplo de saída de comando do PGW2200. Detalha artigos para verificar para ver se há durante a verificação.

```
sc1 mml>rtrv-ne
   MGC-01 - Media Gateway Controller 2002-01-14 11:47:24
M  RTRV
   "Type:MGC"
   "Hardware platform:sun4u sparc SUNW,Ultra-60"
   "Vendor:"Cisco Systems, Inc.""
   "Location:MGC-01 - Media Gateway Controller"
   "Version:"7.4(11)"
!--- MGC software version running on PGW 2200. "Platform State:ACTIVE" !--- State of the PGW
2200. ; sc1 mml>rtrv-softw:all
!--- Make sure all the processes are active and running. MGC-01 - Media Gateway Controller 2002-
01-14 11:47:29 M RTRV "CFM-01:RUNNING ACTIVE" "ALM-01:RUNNING ACTIVE" "MM-01:RUNNING ACTIVE"
"AMDMPR-01:RUNNING ACTIVE" "CDRDMPR-01:RUNNING ACTIVE" "DSKM-01:RUNNING IN N/A STATE" "MMDB-
01:RUNNING IN N/A STATE" "POM-01:RUNNING ACTIVE" "MEASAGT:RUNNING ACTIVE" "OPERSAGT:RUNNING
ACTIVE" "PROVSAGT:RUNNING ACTIVE" "priip-1:RUNNING IN N/A STATE" "Replic-01:RUNNING ACTIVE"
```

```
"ENG-01:RUNNING ACTIVE" "IOCM-01:RUNNING ACTIVE" "TCAP-01:RUNNING IN N/A STATE" "ss7-a-1:RUNNING
IN N/A STATE" "FOD-01:RUNNING IN N/A STATE" "LOG-01:RUNNING IN N/A STATE" ; sc1 mml>rtrv-sc:all
   MGC-01 - Media Gateway Controller 2002-01-14 11:47:36
M  RTRV
   "gw1link1:signas1,LID=0:IS"
    !--- IP signaling link from the NAS to PGW 2200 (rlm group) !--- LID=0:IS means the RLM is
up. /* Link1 between gw1 and the sc2200-1 */ "ls1-link1:ls1,LID=0:IS"
!--- IP signaling link from the SLT to the PGW 2200 (C7IPLINK). /* Link1 for ls1 */ ; sc1
mml>rtrv-dest:all
   MGC-01 - Media Gateway Controller 2002-01-14 11:47:39
M  RTRV
   "dpc-sc2200:PKG=SS7-ANSI,ASSOC=signas1,PST=IS,SST=RSTO"
    !--- SS7 signal to the destination point code (DPC). "signas1:PKG=ISDNPRI,ASSOC=dpc-
sc2200,PST=IS,SST=RSTO"
!--- ISDN signaling between the NAS and the PGW 2200 !--- (same as show isdn status on NAS).

   ;

sc1 mml>rtrv-tc:all
   Retrieving results.  This could take a few moments...
   MGC-01 - Media Gateway Controller 2002-01-14 11:47:46
M  RTRV
   "dpc-sc2200:CIC=1,PST=IS,CALL=IDLE,BLK=NONE"
!--- InterMachine Trunk (IMT) status on SS7 side toward the DPC switch. "dpc-
sc2200:CIC=2,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=3,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=4,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=5,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=6,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=7,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=8,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=9,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=10,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=11,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=12,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=13,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=14,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=15,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=16,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=17,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=18,PST=IS,CALL=IDLE,BLK=NONE" <Press Enter to continue OR Press * and Enter to quit
output of command> "dpc-sc2200:CIC=19,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=20,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=21,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=22,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=23,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=24,PST=IS,CALL=IDLE,BLK=NONE" "signas1:TC=1,CALL=IDLE,PST=IS,SPAN=0" !---
Corresponding T1 timeslots on the NAS gateway side to the SC !--- (same as show isdn service on
NAS) CALL= specify the direction of the call !--- SPAN=0 specify the nfas_int.

"signas1:TC=2,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=3,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=4,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=5,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=6,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=7,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=8,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=9,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=10,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=11,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=12,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=13,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=14,CALL=IDLE,PST=IS,SPAN=0"

<Press Enter to continue OR Press * and Enter to quit output of command>
   "signas1:TC=15,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=16,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=17,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=18,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=19,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=20,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=21,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=22,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=23,CALL=IDLE,PST=IS,SPAN=0"
```

```
   "signas1:TC=24,CALL=IDLE,PST=IS,SPAN=0"

sc1 mml>prov-rtrv:all
!--- Retrieved the current configuration on the PGW 2200. MGC-01 - Media Gateway Controller
2002-01-15 09:25:12 M RTRV "session=active:all" /* NAME COMPID Parent Name TID Description ----
-------- ----------- --- ----------- "sc1-card1" 00050001 "mgc-01" CARD "1st Ethernet card in
sc2200-1" "en1" 00060001 "sc1-card1" ENETIF "Interface for 1st ethernet card in sc2200-1" "ls1"
00080001 "dpc-sc2200" LNKSET "Link set from sc2200-2 to sc2200-1" "gw1link1"    00100001
"signas1"      IPLNK       "Link1 between gw1 and the sc2200-1"
"route1"      00110001  "mgc-01"       SS7ROUTE    "route for ls1"
"opc-sc2200"  00130001  "mgc-01"       PTCODE      "Own point code for SC2200-1"
"dpc-sc2200"  00130002  "mgc-01"       PTCODE      "dest point code sc2200-2"
"SIGNAS1"     00140001  "GW1"          NASPATH     "SIGNALING SERVICE TO GW1"
"ss7srv"      00150001  "dpc-sc2200"   SS7PATH     "SS7 service to switch-va"
"gw1"         00160001  "mgc-01"       EXTNODE     "Gateway 1 connected to switch-va"
"ls1-link1"   001d0001  "ls1"          C7IPLNK     "Link1 for ls1"
   */
   ;
sc1 mml>prov-rtrv:NASPATH:name="signas1"
   MGC-01 - Media Gateway Controller 2002-01-15 09:25:27
M  RTRV
"SESSION=ACTIVE:NASPATH"
   /*
NAME = signas1
DESC = Signaling service to gw1
EXTNODE = gw1
MDO = BELL_1268_C3
   */
   ;
 !--- In PGW release 9.3(2) and later, the BELL_1268_C3 variant !--- is changed to BELL_1268_C2.
prov-add:NASPATH:NAME="signas1",DESC="Signaling Service to V5300-1",EXTNODE="v5300-
1",MDO="BELL_1268_C2",CUSTGRPID="0000" sc1 mml>prov-rtrv:IPLNK:name="gw1link1"
 !--- Get detail information on the IP link to the PGW 2200. MGC-01 - Media Gateway Controller
2002-01-15 09:25:49 M RTRV "SESSION=ACTIVE:IPLNK" /* NAME = gw1link1 DESC = Link1 between gw1
and the sc2200-1 SVC = signas1 IF = en1 !--- Use Ethernet interface by sc1-card1 !--- which is
bound to the hme0 interface.

IPADDR = IP_Addr1
!--- IP_Addr1(172.16.13.132) defined in the XECfgParm.dat. PORT = 3001 !--- UDP port used for
the ISDN signaling. PEERADDR = 172.16.13.141 !--- IP address of the NAS gateway. PEERPORT = 3001
!--- UDP port to be used on the NAS gateway for ISDN signaling. PRI = 1 !--- Priority level
defined for the IP link. SIGSLOT = 0 SIGPORT = 0 NEXTHOP = 0.0.0.0 NETMASK = 255.255.255.255 */
; sc1 mml>
```

Você pode igualmente verificar esta mesma informação nos arquivos .dat situados no diretório de /opt/CiscoMGC/etc. Os arquivos .dat são a informação recolhida de configurar e abastecimento o PGW2200. O arquivo do sigChanDevIp.dat contém toda a informação no enlace IP ao PGW2200 do gateway NAS e do SLT.

```
sc1 mml>rtrv-ne
   MGC-01 - Media Gateway Controller 2002-01-14 11:47:24
M  RTRV
   "Type:MGC"
   "Hardware platform:sun4u sparc SUNW,Ultra-60"
   "Vendor:"Cisco Systems, Inc.""
   "Location:MGC-01 - Media Gateway Controller"
   "Version:"7.4(11)"
!--- MGC software version running on PGW 2200. "Platform State:ACTIVE" !--- State of the PGW
2200. ; sc1 mml>rtrv-softw:all
!--- Make sure all the processes are active and running. MGC-01 - Media Gateway Controller 2002-
01-14 11:47:29 M RTRV "CFM-01:RUNNING ACTIVE" "ALM-01:RUNNING ACTIVE" "MM-01:RUNNING ACTIVE"
"AMDMPR-01:RUNNING ACTIVE" "CDRDMPR-01:RUNNING ACTIVE" "DSKM-01:RUNNING IN N/A STATE" "MMDB-
```

```
01:RUNNING IN N/A STATE" "POM-01:RUNNING ACTIVE" "MEASAGT:RUNNING ACTIVE" "OPERSAGT:RUNNING
ACTIVE" "PROVSAGT:RUNNING ACTIVE" "priip-1:RUNNING IN N/A STATE" "Replic-01:RUNNING ACTIVE"
"ENG-01:RUNNING ACTIVE" "IOCM-01:RUNNING ACTIVE" "TCAP-01:RUNNING IN N/A STATE" "ss7-a-1:RUNNING
IN N/A STATE" "FOD-01:RUNNING IN N/A STATE" "LOG-01:RUNNING IN N/A STATE" ; sc1 mml>rtrv-sc:all
   MGC-01 - Media Gateway Controller 2002-01-14 11:47:36
M  RTRV
   "gw1link1:signas1,LID=0:IS"
    !--- IP signaling link from the NAS to PGW 2200 (rlm group) !--- LID=0:IS means the RLM is
up. /* Link1 between gw1 and the sc2200-1 */ "ls1-link1:ls1,LID=0:IS"
!--- IP signaling link from the SLT to the PGW 2200 (C7IPLINK). /* Link1 for ls1 */ ; sc1
mml>rtrv-dest:all
   MGC-01 - Media Gateway Controller 2002-01-14 11:47:39
M  RTRV
   "dpc-sc2200:PKG=SS7-ANSI,ASSOC=signas1,PST=IS,SST=RSTO"
    !--- SS7 signal to the destination point code (DPC). "signas1:PKG=ISDNPRI,ASSOC=dpc-
sc2200,PST=IS,SST=RSTO"
!--- ISDN signaling between the NAS and the PGW 2200 !--- (same as show isdn status on NAS).

   ;

sc1 mml>rtrv-tc:all
   Retrieving results.  This could take a few moments...
   MGC-01 - Media Gateway Controller 2002-01-14 11:47:46
M  RTRV
   "dpc-sc2200:CIC=1,PST=IS,CALL=IDLE,BLK=NONE"
!--- InterMachine Trunk (IMT) status on SS7 side toward the DPC switch. "dpc-
sc2200:CIC=2,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=3,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=4,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=5,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=6,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=7,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=8,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=9,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=10,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=11,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=12,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=13,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=14,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=15,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=16,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=17,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=18,PST=IS,CALL=IDLE,BLK=NONE" <Press Enter to continue OR Press * and Enter to quit
output of command> "dpc-sc2200:CIC=19,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=20,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=21,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=22,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=23,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=24,PST=IS,CALL=IDLE,BLK=NONE" "signas1:TC=1,CALL=IDLE,PST=IS,SPAN=0" !---
Corresponding T1 timeslots on the NAS gateway side to the SC !--- (same as show isdn service on
NAS) CALL= specify the direction of the call !--- SPAN=0 specify the nfas_int.

"signas1:TC=2,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=3,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=4,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=5,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=6,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=7,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=8,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=9,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=10,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=11,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=12,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=13,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=14,CALL=IDLE,PST=IS,SPAN=0"

<Press Enter to continue OR Press * and Enter to quit output of command>
   "signas1:TC=15,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=16,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=17,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=18,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=19,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=20,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=21,CALL=IDLE,PST=IS,SPAN=0"
```

```
   "signas1:TC=22,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=23,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=24,CALL=IDLE,PST=IS,SPAN=0"

sc1 mml>prov-rtrv:all
!--- Retrieved the current configuration on the PGW 2200. MGC-01 - Media Gateway Controller
2002-01-15 09:25:12 M RTRV "session=active:all" /* NAME COMPID Parent Name TID Description ----
-------- ----------- --- ----------- "sc1-card1" 00050001 "mgc-01" CARD "1st Ethernet card in
sc2200-1" "en1" 00060001 "sc1-card1" ENETIF "Interface for 1st ethernet card in sc2200-1" "ls1"
00080001 "dpc-sc2200" LNKSET "Link set from sc2200-2 to sc2200-1" "gw1link1"    00100001
"signas1"      IPLNK       "Link1 between gw1 and the sc2200-1"
"route1"      00110001  "mgc-01"       SS7ROUTE    "route for ls1"
"opc-sc2200"  00130001  "mgc-01"       PTCODE      "Own point code for SC2200-1"
"dpc-sc2200"  00130002  "mgc-01"       PTCODE      "dest point code sc2200-2"
"SIGNAS1"     00140001  "GW1"          NASPATH     "SIGNALING SERVICE TO GW1"
"ss7srv"      00150001  "dpc-sc2200"   SS7PATH     "SS7 service to switch-va"
"gw1"         00160001  "mgc-01"       EXTNODE     "Gateway 1 connected to switch-va"
"ls1-link1"   001d0001  "ls1"          C7IPLNK     "Link1 for ls1"
   */
   ;
sc1 mml>prov-rtrv:NASPATH:name="signas1"
   MGC-01 - Media Gateway Controller 2002-01-15 09:25:27
M  RTRV
"SESSION=ACTIVE:NASPATH"
   /*
NAME = signas1
DESC = Signaling service to gw1
EXTNODE = gw1
MDO = BELL_1268_C3
   */
   ;
 !--- In PGW release 9.3(2) and later, the BELL_1268_C3 variant !--- is changed to BELL_1268_C2.
prov-add:NASPATH:NAME="signas1",DESC="Signaling Service to V5300-1",EXTNODE="v5300-
1",MDO="BELL_1268_C2",CUSTGRPID="0000" sc1 mml>prov-rtrv:IPLNK:name="gw1link1"
 !--- Get detail information on the IP link to the PGW 2200. MGC-01 - Media Gateway Controller
2002-01-15 09:25:49 M RTRV "SESSION=ACTIVE:IPLNK" /* NAME = gw1link1 DESC = Link1 between gw1
and the sc2200-1 SVC = signas1 IF = en1 !--- Use Ethernet interface by sc1-card1 !--- which is
bound to the hme0 interface.

IPADDR = IP_Addr1
!--- IP_Addr1(172.16.13.132) defined in the XECfgParm.dat. PORT = 3001 !--- UDP port used for
the ISDN signaling. PEERADDR = 172.16.13.141 !--- IP address of the NAS gateway. PEERPORT = 3001
!--- UDP port to be used on the NAS gateway for ISDN signaling. PRI = 1 !--- Priority level
defined for the IP link. SIGSLOT = 0 SIGPORT = 0 NEXTHOP = 0.0.0.0 NETMASK = 255.255.255.255 */
; sc1 mml>
```

Use esta informação para certificar-se de que os IP address configurados no sigChanDevIp.dat estão corretos.

```
sc1 mml>rtrv-ne
   MGC-01 - Media Gateway Controller 2002-01-14 11:47:24
M  RTRV
   "Type:MGC"
   "Hardware platform:sun4u sparc SUNW,Ultra-60"
   "Vendor:"Cisco Systems, Inc.""
   "Location:MGC-01 - Media Gateway Controller"
   "Version:"7.4(11)"
!--- MGC software version running on PGW 2200. "Platform State:ACTIVE" !--- State of the PGW
2200. ; sc1 mml>rtrv-softw:all
!--- Make sure all the processes are active and running. MGC-01 - Media Gateway Controller 2002-
01-14 11:47:29 M RTRV "CFM-01:RUNNING ACTIVE" "ALM-01:RUNNING ACTIVE" "MM-01:RUNNING ACTIVE"
"AMDMPR-01:RUNNING ACTIVE" "CDRDMPR-01:RUNNING ACTIVE" "DSKM-01:RUNNING IN N/A STATE" "MMDB-
01:RUNNING IN N/A STATE" "POM-01:RUNNING ACTIVE" "MEASAGT:RUNNING ACTIVE" "OPERSAGT:RUNNING
```

```
ACTIVE" "PROVSAGT:RUNNING ACTIVE" "priip-1:RUNNING IN N/A STATE" "Replic-01:RUNNING ACTIVE"
"ENG-01:RUNNING ACTIVE" "IOCM-01:RUNNING ACTIVE" "TCAP-01:RUNNING IN N/A STATE" "ss7-a-1:RUNNING
IN N/A STATE" "FOD-01:RUNNING IN N/A STATE" "LOG-01:RUNNING IN N/A STATE" ; sc1 mml>rtrv-sc:all
   MGC-01 - Media Gateway Controller 2002-01-14 11:47:36
M  RTRV
   "gw1link1:signas1,LID=0:IS"
    !--- IP signaling link from the NAS to PGW 2200 (rlm group) !--- LID=0:IS means the RLM is
up. /* Link1 between gw1 and the sc2200-1 */ "ls1-link1:ls1,LID=0:IS"
!--- IP signaling link from the SLT to the PGW 2200 (C7IPLINK). /* Link1 for ls1 */ ; sc1
mml>rtrv-dest:all
   MGC-01 - Media Gateway Controller 2002-01-14 11:47:39
M  RTRV
   "dpc-sc2200:PKG=SS7-ANSI,ASSOC=signas1,PST=IS,SST=RSTO"
    !--- SS7 signal to the destination point code (DPC). "signas1:PKG=ISDNPRI,ASSOC=dpc-
sc2200,PST=IS,SST=RSTO"
!--- ISDN signaling between the NAS and the PGW 2200 !--- (same as show isdn status on NAS).

   ;

sc1 mml>rtrv-tc:all
   Retrieving results.  This could take a few moments...
   MGC-01 - Media Gateway Controller 2002-01-14 11:47:46
M  RTRV
   "dpc-sc2200:CIC=1,PST=IS,CALL=IDLE,BLK=NONE"
!--- InterMachine Trunk (IMT) status on SS7 side toward the DPC switch. "dpc-
sc2200:CIC=2,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=3,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=4,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=5,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=6,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=7,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=8,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=9,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=10,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=11,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=12,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=13,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=14,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=15,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=16,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=17,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=18,PST=IS,CALL=IDLE,BLK=NONE" <Press Enter to continue OR Press * and Enter to quit
output of command> "dpc-sc2200:CIC=19,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=20,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=21,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=22,PST=IS,CALL=IDLE,BLK=NONE" "dpc-sc2200:CIC=23,PST=IS,CALL=IDLE,BLK=NONE" "dpc-
sc2200:CIC=24,PST=IS,CALL=IDLE,BLK=NONE" "signas1:TC=1,CALL=IDLE,PST=IS,SPAN=0" !---
Corresponding T1 timeslots on the NAS gateway side to the SC !--- (same as show isdn service on
NAS) CALL= specify the direction of the call !--- SPAN=0 specify the nfas_int.

"signas1:TC=2,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=3,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=4,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=5,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=6,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=7,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=8,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=9,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=10,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=11,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=12,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=13,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=14,CALL=IDLE,PST=IS,SPAN=0"

<Press Enter to continue OR Press * and Enter to quit output of command>
   "signas1:TC=15,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=16,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=17,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=18,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=19,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=20,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=21,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=22,CALL=IDLE,PST=IS,SPAN=0"
```

```
   "signas1:TC=23,CALL=IDLE,PST=IS,SPAN=0"
   "signas1:TC=24,CALL=IDLE,PST=IS,SPAN=0"

sc1 mml>prov-rtrv:all
!--- Retrieved the current configuration on the PGW 2200. MGC-01 - Media Gateway Controller
2002-01-15 09:25:12 M RTRV "session=active:all" /* NAME COMPID Parent Name TID Description ----
-------- ----------- --- ----------- "sc1-card1" 00050001 "mgc-01" CARD "1st Ethernet card in
sc2200-1" "en1" 00060001 "sc1-card1" ENETIF "Interface for 1st ethernet card in sc2200-1" "ls1"
00080001 "dpc-sc2200" LNKSET "Link set from sc2200-2 to sc2200-1" "gw1link1"    00100001
"signas1"      IPLNK       "Link1 between gw1 and the sc2200-1"
"route1"      00110001  "mgc-01"       SS7ROUTE    "route for ls1"
"opc-sc2200"  00130001  "mgc-01"       PTCODE      "Own point code for SC2200-1"
"dpc-sc2200"  00130002  "mgc-01"       PTCODE      "dest point code sc2200-2"
"SIGNAS1"     00140001  "GW1"          NASPATH     "SIGNALING SERVICE TO GW1"
"ss7srv"      00150001  "dpc-sc2200"   SS7PATH     "SS7 service to switch-va"
"gw1"         00160001  "mgc-01"       EXTNODE     "Gateway 1 connected to switch-va"
"ls1-link1"   001d0001  "ls1"          C7IPLNK     "Link1 for ls1"
   */
   ;
sc1 mml>prov-rtrv:NASPATH:name="signas1"
   MGC-01 - Media Gateway Controller 2002-01-15 09:25:27
M  RTRV
"SESSION=ACTIVE:NASPATH"
   /*
NAME = signas1
DESC = Signaling service to gw1
EXTNODE = gw1
MDO = BELL_1268_C3
   */
   ;
 !--- In PGW release 9.3(2) and later, the BELL_1268_C3 variant !--- is changed to BELL_1268_C2.
prov-add:NASPATH:NAME="signas1",DESC="Signaling Service to V5300-1",EXTNODE="v5300-
1",MDO="BELL_1268_C2",CUSTGRPID="0000" sc1 mml>prov-rtrv:IPLNK:name="gw1link1"
 !--- Get detail information on the IP link to the PGW 2200. MGC-01 - Media Gateway Controller
2002-01-15 09:25:49 M RTRV "SESSION=ACTIVE:IPLNK" /* NAME = gw1link1 DESC = Link1 between gw1
and the sc2200-1 SVC = signas1 IF = en1 !--- Use Ethernet interface by sc1-card1 !--- which is
bound to the hme0 interface.

IPADDR = IP_Addr1
!--- IP_Addr1(172.16.13.132) defined in the XECfgParm.dat. PORT = 3001 !--- UDP port used for
the ISDN signaling. PEERADDR = 172.16.13.141 !--- IP address of the NAS gateway. PEERPORT = 3001
!--- UDP port to be used on the NAS gateway for ISDN signaling. PRI = 1 !--- Priority level
defined for the IP link. SIGSLOT = 0 SIGPORT = 0 NEXTHOP = 0.0.0.0 NETMASK = 255.255.255.255 */
; sc1 mml>
```

Certifique-se de que o protocolo correto ISDN está configurado para ser executado na conexão ISDN/IP.

Obtenha informações identificação do componente PGW2200 as 00100001) (dentro do arquivo do sigChanDevIp.dat para o enlace IP. Então, vá ao arquivo sigChanDev.dat e obtenha o ID do ID de componente do caminho de sinalização componente (00140001) na quarta coluna. Com esta identificação do componente do trajeto do sinal, use o arquivo sigPath.dat para encontrar o protocolo ISDN usado (BELL_1268_C3 ISDNPRI).

Nota: No PGW libere 9.3(2) e mais atrasado, a variação do BELL_1268_C3 é mudada a BELL_1268_C2.

Esta é a saída do PGW2200.

```
sc1% more sigChanDevIp.dat
00100001  IP_Addr1  3001  172.16.13.141  3001  0.0.0.0  255.255.255.255
```

```
001d0001  IP_Addr1  7000  172.16.13.139  32767  0.0.0.0  255.255.255.255
sc1% grep 00100001 *
components.dat:00100001  00140001  "gw1link1"
            "Link1 between gw1 and the sc2200-1"
sigChanDev.dat:00100001  00160001  1  00140001 0003000c  00060001  0
sigChanDevIp.dat:00100001 IP_Addr1  3001  172.16.13.141  3001  0.0.0.0 255.255.255.255
sc1%
sc1% grep 00140001 *
bearChan.dat:101 00130002 ffff 1 00140001 0 1
bearChan.dat:102 00130002 ffff 2 00140001 0 2
bearChan.dat:103 00130002 ffff 3 00140001 0 3
bearChan.dat:104 00130002 ffff 4 00140001 0 4
bearChan.dat:105 00130002 ffff 5 00140001 0 5
bearChan.dat:106 00130002 ffff 6 00140001 0 6
bearChan.dat:107 00130002 ffff 7 00140001 0 7
bearChan.dat:108 00130002 ffff 8 00140001 0 8
bearChan.dat:109 00130002 ffff 9 00140001 0 9
bearChan.dat:110 00130002 ffff a 00140001 0 a
bearChan.dat:111 00130002 ffff b 00140001 0 b
bearChan.dat:112 00130002 ffff c 00140001 0 c
bearChan.dat:113 00130002 ffff d 00140001 0 d
bearChan.dat:114 00130002 ffff e 00140001 0 e
bearChan.dat:115 00130002 ffff f 00140001 0 f
bearChan.dat:116 00130002 ffff 10 00140001 0 10
bearChan.dat:117 00130002 ffff 11 00140001 0 11
bearChan.dat:118 00130002 ffff 12 00140001 0 12
bearChan.dat:119 00130002 ffff 13 00140001 0 13
bearChan.dat:120 00130002 ffff 14 00140001 0 14
bearChan.dat:121 00130002 ffff 15 00140001 0 15
bearChan.dat:122 00130002 ffff 16 00140001 0 16
bearChan.dat:123 00130002 ffff 17 00140001 0 17
bearChan.dat:124 00130002 ffff 18 00140001 0 18
components.dat:00100001  00140001  "gw1link1"  "Link1 between gw1 and the sc2200-1"
components.dat:00140001  00160001  "signas1"  "Signaling service to gw1"
sigChanDev.dat:00100001  00160001  1  00140001  0003000c  00060001  0
sigPath.dat:00140001  ISDNPRI  BELL_1268_C3  0000  0101  22
network  n  0  0  0  2  0000  N

sc1%
```

Notas:

- **00140001** — Identificação do componente do trajeto do sinal.
- **ISDNPRI** — Valor para que o ISDN sobre o IP a trabalhar.
- **BELL_1268_C3 0** — Especifica o tipo de protocolo NI2 preliminar (deve ser este valor para o ISDN sobre o IP).

Nota: No PGW libere 9.3(2) e mais atrasado, a variação do BELL_1268_C3 é mudada a BELL_1268_C2.

Refira a referência de arquivo de dados de configuração para obter mais informações sobre do componente e dos arquivos .dat.

Esta é alguma informação de referência para o PGW2200 à espera. A maioria desta informação reage do modo standby (OOS) fora de serviço.

```
sc3 mml>rtrv-ne
   MGC-02 - Media Gateway Controller 2002-01-15 17:42:50
M  RTRV
   "Type:MGC"
   "Hardware platform:sun4u sparc SUNW,Ultra-60"
```

```
   "Vendor:"Cisco Systems, Inc.""
   "Location:MGC-02 - Media Gateway Controller"
   "Version:"7.4(11)""
   "Platform State:STANDBY"
   !--- The current state of the PGW 2200. ; sc3 mml>rtrv-softw:all
!--- Note the processes are running in STANDBY mode. MGC-02 - Media Gateway Controller 2002-01-
15 17:42:54 M RTRV "CFM-01:RUNNING STANDBY" "ALM-01:RUNNING STANDBY" "MM-01:RUNNING STANDBY"
"AMDMPR-01:RUNNING STANDBY" "CDRDMPR-01:RUNNING STANDBY" "DSKM-01:RUNNING IN N/A STATE" "MMDB-
01:RUNNING IN N/A STATE" "POM-01:RUNNING STANDBY" "MEASAGT:RUNNING STANDBY" "OPERSAGT:RUNNING
STANDBY" "PROVSAGT:RUNNING STANDBY" "priip-1:RUNNING IN N/A STATE" "Replic-01:RUNNING STANDBY"
"ENG-01:RUNNING STANDBY" "IOCM-01:RUNNING STANDBY" "TCAP-01:RUNNING IN N/A STATE" "ss7-a-
1:RUNNING IN N/A STATE" "FOD-01:RUNNING IN N/A STATE" <Press Enter to continue OR Press * and
Enter to quit output of command> "LOG-01:RUNNING IN N/A STATE" ; sc3 mml> rtrv-sc:all
   MGC-02 - Media Gateway Controller 2002-01-15 17:43:00
M  RTRV
   "GW1LINK1:SIGNAS1,LID=0:OOS,STBY"
   /* Link1 between gw1 and the sc2200-1 */
   "ls1-link1:ls1,LID=0:OOS,STBY"
   /* Link1 for ls1 */
   ;
sc3 mml> rtrv-dest:all
   MGC-02 - Media Gateway Controller 2002-01-15 17:43:04
M  RTRV
   "dpc-sc2200:PKG=SS7-ANSI,ASSOC=signas1,PST=IS,SST=RSTO"
   "SIGNAS1:PKG=ISDNPRI,ASSOC=DPC-SC2200,PST=IS,SST=RSTO"
   ;
```

Troubleshooting

Esta seção fornece informações que podem ser usadas para o troubleshooting da sua configuração.

Comandos para Troubleshooting

Os determinados comandos de exibição são apoiados pela ferramenta do Output Interpreter (clientes registrados somente), que permite que você ver uma análise do emissor de comando de execução.

Nota: Consulte Informações Importantes sobre Comandos de Debugação antes de usar comandos **debug**.

- **debugar o grupo do rlm x** — Informação dos indicadores no keepalive e fluxo de pacote de informação entre o PGW2200 e o gateway NAS.
- **mostre a lista de acesso 199** — Usado para filtrar no tráfego entre o PGW2200 e o NAS.
- **debugar o detalhe do pacote 199 IP** — Indica a informação sobre debugging IP detalhado.
- **debugar isdn q921** — Indica os procedimentos de acesso da camada de link de dados 2 que ocorrem no roteador no canal D da interface.
- **a mostra debuga** — Os indicadores debugam a informação.
- **status de ISDN da mostra** — Indica o estado de todas as interfaces.
- **mostre o grupo 0 do rlm** — Indica o estado do RLM.

Quando você pesquisa defeitos a comunicação entre o NAS e o PGW2200, há duas porções principais:

- Sinalização RLM
- Sinalização ISDN

Diversos problemas que podem fazer com que o RLM esteja no estado inativo são:

- Configuração incorreta no roteador ou no PGW2200.
- Fisicamente, as relações (Ethernet, Fast Ethernet, x:23 de série) são parada programada ou têm um cabo ruim.
- Listas de acesso que obstruem uma comunicação entre o IP address de dois dispositivos, a porta 3000 (RLM-mgr), e 3001 UDP (ISDN).

No gateway NAS, execute o **comando debug rlm group x** olhar o keepalive e o fluxo de pacote de informação entre o PGW2200 e o gateway NAS.

Esta saída mostra algum exemplo de saída de comando do gateway NAS. Na operação normal, há Keepalives constante (ECHO_REQ e ECHO_ACK) trocou entre o gateway NAS e o PGW2200 cada 1 segundo. Se isto não ocorre, figure para fora quem é de resposta ou de emissão o Keepalives.

Nota: O TID (ID de transação) é o mesmo reconhecimento da requisição de eco e do eco. Mesmo que o outro PGW2200 (172.16.13.134) reaja do modo standby, comunica-se constantemente com o gateway NAS.

```
NAS1#debug rlm group 0
RLM Group debugging is on
NAS1#terminal monitor
NAS1#
*Jan 14 14:50:53.270: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.132] tx ECHO_REQ(tid=15304)
*Jan 14 14:50:53.270: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] tx ECHO_REQ(tid=15734)
*Jan 14 14:50:53.270: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.132] rx ECHO_ACK(tid=15304)
*Jan 14 14:50:53.270: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] rx ECHO_ACK(tid=15734)

*Jan 14 14:50:54.270: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.132] tx ECHO_REQ(tid=15305)
*Jan 14 14:50:54.270: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] tx ECHO_REQ(tid=15735)
*Jan 14 14:50:54.270: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.132] rx ECHO_ACK(tid=15305)
*Jan 14 14:50:54.270: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] rx ECHO_ACK(tid=15735)
```

Esta é a partida do grupo RLM e sinalização ISDN quando você emite o **comando no shut ao** grupo RLM.

```
NAS1#show access-list 199
!--- Access-list used to filter on traffic between !--- the PGW 2200 and the NAS. Extended IP
access list 199 permit ip host 172.16.13.132 host 172.16.13.141 permit ip host 172.16.13.141
host 172.16.13.132 NAS1#debug ip packet 199 det
IP packet debugging is on (detailed) for access list 199
NAS1#debug rlm group 0
RLM Group debugging is on
NAS1#debug isdn q921
ISDN Q921 packets debugging is on
NAS1#debug rlm group 0 event
RLM Group Event debugging is on
NAS1#debug rlm group 0 packet
RLM Group Packet debugging is on
```

```
NAS1#show debug
Generic IP:
  IP packet debugging is on (detailed) for access list 199
RLM_GROUP:
  RLM Group debugging is on
  RLM Group Event debugging is on
  RLM Group Packet debugging is on
ISDN:
  ISDN Q921 packets debugging is on
  ISDN Q921 packets debug DSLs. (On/Off/No DSL:1/0/-)
  DSL  0 --> 7
  1 - - - - - - -
NAS1#
NAS1#configure term
Enter configuration commands, one per line.  End with CNTL/Z.
NAS1(config)#rlm group
NAS1(config)#rlm group 0
NAS1(config-rlm-group)#no shut
NAS1(config-rlm-group)#end
NAS1#

!--- Receive event to enable RLM and wait for the force-down timer !--- to expire before it
starts to send the keepalives to !--- establish the link to the PGW 2200. *Jan 14 18:04:21.734:
rlm 0: [State_Shutdown, rx ENABLE]
*Jan 14 18:04:22.222: %SYS-5-CONFIG_I: Configured from console by vty0 (171.69.85.65)

NAS1#show rlm group 0
RLM Group 0 Status
 User/Port: RLM_MGR/3000 ISDN/3001
 RLM Version : 2
 Link State: Down       Last Link Status Reported: Down
!--- Current state of the RLM group. Next tx TID: 1 Last rx TID: 0 Server Link Group[sc1]: Last
Reported Priority: HIGH link [172.16.13.141(FastEthernet0), 172.16.13.132] = socket[closed]
!--- Communication socket is closed. Server Link Group[sc3]: Last Reported Priority: LOW link
[172.16.13.141(FastEthernet0), 172.16.13.134] = socket[closed] RLM Group 0 Timer Values
open_wait = 3s force-down = 30s recovery = 12s switch-link = 5s minimum-up = 60s retransmit = 1s
keepalive = 1s RLM Group 0 Statistics Link_up: last time occurred at *Jan 14 17:59:49.870, total
transition=4 avg=01:49:34.264, max=05:40:16.976, min=00:00:00.000, latest=00:02:08.728
Link_down: last time occurred at *Jan 14 18:01:58.598, total transition=3 avg=00:08:27.002,
max=00:16:18.004, min=00:00:00.000, latest=00:16:18.004 Link_recovered: last time occurred at
*Jan 14 12:03:14.887, success=2(100%), failure=0 avg=0.004s, max=0.004s, min=0.000s,
latest=0.004s Link_switched: last time occurred at none, success=0(0%), failure=0 avg=0.000s,
max=0.000s, min=0.000s, latest=0.000s Server_changed: last time occurred at *Jan 14 12:03:14.891
for totally 2 times Server Link Group[sc1]: Open the link [172.16.13.141(FastEthernet0),
172.16.13.132]: last time occurred at *Jan 14 17:59:46.870, success=2(100%), failure=0
avg=1.502s, max=3.000s, min=0.000s, latest=0.004s Echo over link [172.16.13.141(FastEthernet0),
172.16.13.132]: last time occurred at *Jan 14 18:01:57.874, success=25581(99%), failure=35
avg=0.000s, max=0.032s, min=0.000s, latest=0.000s Server Link Group[sc3]: Open the link
[172.16.13.141(FastEthernet0), 172.16.13.134]: last time occurred at *Jan 14 17:59:46.870,
success=2(100%), failure=0 avg=1.502s, max=3.000s, min=0.000s, latest=0.004s Echo over link
[172.16.13.141(FastEthernet0), 172.16.13.134]: last time occurred at *Jan 14 18:01:57.874,
success=26182(99%), failure=40 avg=0.000s, max=0.032s, min=0.000s, latest=0.000s NAS1#show isdn
status
!--- ISDN status is always DOWN if RLM is not up and running. Global ISDN Switchtype = primary-
ni ISDN Serial0:23 interface rlm-group = 0 dsl 0, interface ISDN Switchtype = primary-ni :
Primary D-channel of nfas group 0 Layer 1 Status: DEACTIVATED
Layer 2 Status:
        TEI = 0, Ces = 1, SAPI = 0, State = TEI_ASSIGNED
    Layer 3 Status:
        0 Active Layer 3 Call(s)
    Active dsl 0 CCBs = 0
    The Free Channel Mask:  0xFFFFFF
    Total Allocated ISDN CCBs = 0
NAS1#
```

!--- Force-down timer expired and router starts to send out !--- the ECHO_REQ to the PGW 2200 to establish the link. *Jan 14 18:04:51.734: rlm 0: [State_Down, **rx DOWN_MIN_TIMEOUT]**
*Jan 14 18:04:51.734: rlm 0: link [172.16.13.141(FastEthernet0), 172.16.13.132] =
socket[172.16.13.141, 172.16.13.132]

!--- Open the RLM user socket for both the RLM !--- manager and ISDN signaling. !--- Router sends out ECHO_REQ (RLM keepalive) to !--- the PGW 2200 to start the communication. *Jan 14 18:04:51.734: rlm 0: [State_Down, rx USER_SOCKET_OPENED] over link
[172.16.13.141(FastEthernet0), 172.16.13.132] for user RLM_MGR *Jan 14 18:04:51.734: rlm 0: link
[172.16.13.141(FastEthernet0), 172.16.13.132] **is opened**
*Jan 14 18:04:51.734: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.132] **tx ECHO_REQ(tid=25616)**
*Jan 14 18:04:51.734: **IP: s=172.16.13.141 (local),
d=172.16.13.132 (FastEthernet0), len 36, sending**
*Jan 14 18:04:51.734: **UDP src=3000, dst=3000**
*Jan 14 18:04:51.734: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.132] =
socket[172.16.13.141, 172.16.13.132]
*Jan 14 18:04:51.734: rlm 0: [State_Down, rx USER_SOCKET_OPENED] over link
[172.16.13.141(FastEthernet0), 172.16.13.132] **for user ISDN**

!--- Same process for the standby PGW 2200. *Jan 14 18:04:51.734: rlm 0: link
[172.16.13.141(FastEthernet0), 172.16.13.134] = socket[172.16.13.141, 172.16.13.134] *Jan 14
18:04:51.734: rlm 0: [State_Down, rx USER_SOCKET_OPENED] over link
[172.16.13.141(FastEthernet0), 172.16.13.134] for user RLM_MGR *Jan 14 18:04:51.734: rlm 0: link
[172.16.13.141(FastEthernet0), 172.16.13.134] is opened *Jan 14 18:04:51.734: rlm 0: link
[172.16.13.141(FastEthernet0), 172.16.13.134] **tx ECHO_REQ(tid=26222)**
*Jan 14 18:04:51.738: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] = socket[172.16.13.141, 172.16.13.134]
*Jan 14 18:04:51.738: rlm 0: [State_Down, rx USER_SOCKET_OPENED] over link
 [172.16.13.141(FastEthernet0), 172.16.13.134] for user ISDN
*Jan 14 18:04:51.738: IP: s=172.16.13.132 (FastEthernet0), d=172.16.13.141
 (FastEthernet0), len 36, rcvd 3
*Jan 14 18:04:51.738:   UDP src=3000, dst=3000

!--- Recevied the ECHO_ACK back from the active and !--- standby PGW 2200. *Jan 14 18:04:51.738:
rlm 0: link [172.16.13.141(FastEthernet0), 172.16.13.132] rx **ECHO_ACK(tid=25616)**
*Jan 14 18:04:51.738: rlm 0: [State_Down, rx LINK_OPENED] over link
[172.16.13.141(FastEthernet0), 172.16.13.132]
*Jan 14 18:04:51.738: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] rx **ECHO_ACK(tid=26222)**
*Jan 14 18:04:51.738: rlm 0: [State_Down, rx LINK_OPENED] over link
[172.16.13.141(FastEthernet0), 172.16.13.134]

!--- Router continues to send out ECHO_REQ and !--- receive ECHO_ACK several times. !--- This is needed to make sure the communication !--- between the NAS gateway and PGW 2200 is good. *Jan 14
18:04:52.738: rlm 0: link [172.16.13.141(FastEthernet0), 172.16.13.132] tx ECHO_REQ(tid=25617)
*Jan 14 18:04:52.738: IP: s=172.16.13.141 (local), d=172.16.13.132 (FastEthernet0), len 36,
sending *Jan 14 18:04:52.738: UDP src=3000, dst=3000 *Jan 14 18:04:52.738: rlm 0: link
[172.16.13.141(FastEthernet0), 172.16.13.134] tx ECHO_REQ(tid=26223) *Jan 14 18:04:52.738: IP:
s=172.16.13.132 (FastEthernet0), d=172.16.13.141 (FastEthernet0), len 36, rcvd 3 *Jan 14
18:04:52.738: UDP src=3000, dst=3000 *Jan 14 18:04:52.738: rlm 0: link
[172.16.13.141(FastEthernet0), 172.16.13.132] rx ECHO_ACK(tid=25617) *Jan 14 18:04:52.738: rlm
0: link [172.16.13.141(FastEthernet0), 172.16.13.134] rx ECHO_ACK(tid=26223) *Jan 14
18:04:53.738: rlm 0: link [172.16.13.141(FastEthernet0), 172.16.13.132] tx ECHO_REQ(tid=25618)
*Jan 14 18:04:53.738: IP: s=172.16.13.141 (local), d=172.16.13.132 (FastEthernet0), len 36,
sending *Jan 14 18:04:53.738: UDP src=3000, dst=3000 *Jan 14 18:04:53.738: rlm 0: link
[172.16.13.141(FastEthernet0), 172.16.13.134] tx ECHO_REQ(tid=26224) *Jan 14 18:04:53.738: IP:
s=172.16.13.132 (FastEthernet0), d=172.16.13.141 (FastEthernet0), len 36, rcvd 3 *Jan 14
18:04:53.738: UDP src=3000, dst=3000 *Jan 14 18:04:53.738: rlm 0: link
[172.16.13.141(FastEthernet0), 172.16.13.132] rx ECHO_ACK(tid=25618) *Jan 14 18:04:53.738: rlm
0: link [172.16.13.141(FastEthernet0), 172.16.13.134] rx ECHO_ACK(tid=26224) *!--- After three keepalives are transmitted and three replies !--- are received back (approximately the open_wait*

timer), the router !--- starts the link activation. !--- Note that all of the links have a preferred weight !--- association. NAS chooses the link with the highest preference !--- among those successful links. NAS waits for !--- a certain amount of time specified by open_wait timer !--- (three seconds) to allow the highest preference connections to reach !--- the PGW 2200 before it selects the signaling link. !--- Once the highest preference link is established, !--- NAS chooses it as the active signaling link immediately and does not wait !--- for the rest of the connections. Once the active signaling link is decided, !--- NAS sends out the datagram RLM message START_REQ over the chosen !--- link to the PGW 2200. When PGW 2200 receives this message, !--- SAS responds with a START_ACK message and then declares the !--- link to be up as well. At this point, the PGW 2200 can start !--- to transmit packets. When NAS receives START_ACK back, NAS !--- declares the link to be up or active and leaves the rest of the links alone. !--- For managing UDP links, UDP sockets opened under an active !--- link are assigned to those registered RLM users for !--- transmitting and receiving packets. The status RLM_LINK_UP !--- is reported to RLM users after the signaling link is !--- established and synchronized. At this point, NAS can start !--- to transmit packets. Due to the unreliable transport under UDP, !--- these START_REQ and START_ACK packets can get lost. RLM uses !--- the timer retransmission timer to wait for the START_ACK. !--- If the timer expires and the link is still not closed or down, the packet !--- is resent under UDP. *Jan 14 18:04:54.734: rlm 0: [State_Down, rx OPEN_WAIT_TIMEOUT] *Jan 14 18:04:54.734: rlm 0: link [172.16.13.141(FastEthernet0), 172.16.13.132] **tx START_REQ(tid=0)**
*Jan 14 18:04:54.734: **IP: s=172.16.13.141 (local), d=172.16.13.132 (FastEthernet0), len 36, sending**
*Jan 14 18:04:54.734: **UDP src=3000, dst=3000**
*Jan 14 18:04:54.734: rlm 0: link [172.16.13.141(FastEthernet0), 172.16.13.132] **requests activation**

*Jan 14 18:04:54.734: **IP: s=172.16.13.132 (FastEthernet0), d=172.16.13.141 (FastEthernet0), len 36, rcvd 3**
*Jan 14 18:04:54.734: **UDP src=3000, dst=3000**
!--- RLM manager UDP port. *Jan 14 18:04:54.734: **IP: s=172.16.13.132 (FastEthernet0), d=172.16.13.141 (FastEthernet0), len 31, rcvd 3**
*Jan 14 18:04:54.734: **UDP src=3001, dst=3001**
!--- ISDN signaling UDP port. *Jan 14 18:04:54.734: rlm 0: link [172.16.13.141(FastEthernet0), 172.16.13.132] **rx START_ACK(tid=0)**
*Jan 14 18:04:54.734: rlm 0: [State_Down, rx START_ACK] over link [172.16.13.141(FastEthernet0), 172.16.13.132]
*Jan 14 18:04:54.734: **%ISDN-4-RLM_STATUS_CHANGE: ISDN SC Se0:23 SC: Status Changed to: Link Up.**
*Jan 14 18:04:54.734: rlm 0: link [172.16.13.141(FastEthernet0), 172.16.13.132] **is activated**

!--- The router starts to establish the ISDN signaling !--- with the PGW 2200. Note, the NAS gateway sends the !--- signaling packet across the FastEthernet interface using UDP !--- port 3001. Once both sides have received the !--- Unnumbered Acknowledge (UA) frame from each other, ISDN Layer 2 status !--- moves from the TEI_ASSIGNED state to the MULTIPLE_FRAME_ESTABLISHED state. !--- Next, normal ISDN keepalives (RRf and RRp) are being exchanged between !--- the PGW 2200 and the NAS gateway. *Jan 14 18:04:54.738: ISDN Se0:23 SC: **RX <- SABMEp** c/r = 1 sapi = 0 tei = 0
*Jan 14 18:04:54.738: %ISDN-6-LAYER2UP: Layer 2 for Interface Se0:23 SC, TEI 0 changed to up
*Jan 14 18:04:54.738: ISDN Se0:23 SC:
TX -> SABMEp c/r = 0 sapi = 0 tei = 0
*Jan 14 18:04:54.738: IP: s=172.16.13.141 (local), d=172.16.13.132 (FastEthernet0), len 31, sending
*Jan 14 18:04:54.738: UDP src=3001, dst=3001
*Jan 14 18:04:54.742:
ISDN Se0:23 SC: TX -> UAf c/r = 1 sapi = 0 tei = 0
*Jan 14 18:04:54.742: IP: s=172.16.13.141 (local), d=172.16.13.132 (FastEthernet0), len 31, sending
*Jan 14 18:04:54.742: UDP src=3001, dst=3001
*Jan 14 18:04:54.742: ISDN Se0:23 SC: TX -> INFOc sapi = 0 tei = 0 ns = 0 nr = 0 i = 0x430200000A6808C000000000000000
*Jan 14 18:04:54.742: IP: s=172.16.13.141 (local), d=172.16.13.132

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(FastEthernet0), len 47, sending
*Jan 14 18:04:54.742:     UDP src=3001, dst=3001
*Jan 14 18:04:54.742: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] tx ECHO_REQ(tid=26225)
*Jan 14 18:04:54.742: IP: s=172.16.13.132 (FastEthernet0), d=172.16.13.141
(FastEthernet0), len 31, rcvd 3
*Jan 14 18:04:54.742:     UDP src=3001, dst=3001
*Jan 14 18:04:54.742: IP: s=172.16.13.132 (FastEthernet0), d=172.16.13.141
(FastEthernet0), len 32, rcvd 3
*Jan 14 18:04:54.746:     UDP src=3001, dst=3001
*Jan 14 18:04:54.746: ISDN Se0:23 SC: TX ->  INFOc sapi = 0  tei = 0
ns = 1  nr = 0  i = 0x430200000A6808C000000000000000
*Jan 14 18:04:54.746: IP: s=172.16.13.141 (local), d=172.16.13.132
(FastEthernet0), len 47, sending
*Jan 14 18:04:54.746:     UDP src=3001, dst=3001
*Jan 14 18:04:54.746: rlm 0: link [172.16.13.141(FastEthernet0), 172.16.13.134]
rx ECHO_ACK(tid=26225)
*Jan 14 18:04:54.746: ISDN Se0:23 SC: RX <-  UAf c/r = 0  sapi = 0  tei = 0
*Jan 14 18:04:54.746: ISDN Se0:23 SC: RX <-  RRr sapi = 0  tei = 0  nr = 1
*Jan 14 18:04:54.750: IP: s=172.16.13.132 (FastEthernet0), d=172.16.13.141
(FastEthernet0), len 32, rcvd 3
*Jan 14 18:04:54.750:     UDP src=3001, dst=3001
*Jan 14 18:04:54.750: ISDN Se0:23 SC: RX <-  RRr sapi = 0  tei = 0  nr = 2
*Jan 14 18:04:54.754: IP: s=172.16.13.132 (FastEthernet0), d=172.16.13.141
(FastEthernet0), len 41, rcvd 3
*Jan 14 18:04:54.754:     UDP src=3001, dst=3001
*Jan 14 18:04:54.758: ISDN Se0:23 SC: RX <-  INFOc sapi = 0  tei = 0  ns = 0
 nr = 2  i = 0x430280005A080283A9
*Jan 14 18:04:54.758: ISDN Se0:23 SC: TX ->  RRr sapi = 0  tei = 0  nr = 1
*Jan 14 18:04:54.758: IP: s=172.16.13.141 (local), d=172.16.13.132
(FastEthernet0), len 32, sending
*Jan 14 18:04:54.758:     UDP src=3001, dst=3001
*Jan 14 18:04:54.766: IP: s=172.16.13.132 (FastEthernet0), d=172.16.13.141
(FastEthernet0), len 41, rcvd 3
*Jan 14 18:04:54.766:     UDP src=3001, dst=3001
*Jan 14 18:04:54.766: ISDN Se0:23 SC: RX <-  INFOc sapi = 0  tei = 0
 ns = 1  nr = 2  i = 0x430280005A080283A9
*Jan 14 18:04:54.766: ISDN Se0:23 SC: TX ->  RRr sapi = 0  tei = 0  nr = 2
*Jan 14 18:04:54.766: IP: s=172.16.13.141 (local), d=172.16.13.132
(FastEthernet0), len 32, sending
*Jan 14 18:04:54.770:     UDP src=3001, dst=3001
*Jan 14 18:04:55.742: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] tx ECHO_REQ(tid=26226)
*Jan 14 18:04:55.742: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] rx ECHO_ACK(tid=26226)
*Jan 14 18:04:56.734: %LINK-3-UPDOWN: Interface Serial0:23,
changed state to up
*Jan 14 18:04:56.742: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.132] tx ECHO_REQ(tid=25619)
*Jan 14 18:04:56.742: IP: s=172.16.13.141 (local), d=172.16.13.132
(FastEthernet0), len 36, sending
*Jan 14 18:04:56.742:     UDP src=3000, dst=3000
*Jan 14 18:04:56.742: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] tx ECHO_REQ(tid=26227)
*Jan 14 18:04:56.742: IP: s=172.16.13.132 (FastEthernet0), d=172.16.13.141
(FastEthernet0), len 36, rcvd 3
*Jan 14 18:04:56.742:     UDP src=3000, dst=3000
*Jan 14 18:04:56.742: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.132] rx ECHO_ACK(tid=25619)
*Jan 14 18:04:56.742: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] rx ECHO_ACK(tid=26227)
*Jan 14 18:04:57.742: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.132] tx ECHO_REQ(tid=25620)
*Jan 14 18:04:57.742: IP: s=172.16.13.141 (local), d=172.16.13.132
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(FastEthernet0), len 36, sending
*Jan 14 18:04:57.742:     UDP src=3000, dst=3000
*Jan 14 18:04:57.742: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] tx ECHO_REQ(tid=26228)
*Jan 14 18:04:57.742: IP: s=172.16.13.132 (FastEthernet0), d=172.16.13.141
(FastEthernet0), len 36, rcvd 3
*Jan 14 18:04:57.742:     UDP src=3000, dst=3000
*Jan 14 18:04:57.742: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.132] rx ECHO_ACK(tid=25620)
*Jan 14 18:04:57.742: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] rx ECHO_ACK(tid=26228)
*Jan 14 18:04:57.866: IP: s=172.16.13.132 (FastEthernet0), d=172.16.13.141
 (FastEthernet0), len 47, rcvd 3
*Jan 14 18:04:57.866:     UDP src=3001, dst=3001
*Jan 14 18:04:57.866: ISDN Se0:23 SC: RX <-  INFOc sapi = 0  tei = 0
ns = 2  nr = 2  i = 0x430200000A6808C000000000000000
*Jan 14 18:04:57.866: ISDN Se0:23 SC: TX ->  RRr sapi = 0  tei = 0  nr = 3
*Jan 14 18:04:57.870: IP: s=172.16.13.141 (local), d=172.16.13.132
(FastEthernet0), len 32, sending
*Jan 14 18:04:57.870:     UDP src=3001, dst=3001
*Jan 14 18:04:57.870: ISDN Se0:23 SC: TX ->  INFOc sapi = 0  tei = 0
ns = 2  nr = 3  i = 0x430280000A6808C000000000000000
*Jan 14 18:04:57.870: IP: s=172.16.13.141 (local), d=172.16.13.132
(FastEthernet0), len 47, sending
*Jan 14 18:04:57.870:     UDP src=3001, dst=3001
*Jan 14 18:04:57.870: ISDN Se0:23 SC: TX ->  INFOc sapi = 0  tei = 0
ns = 3  nr = 3  i = 0x43020000066605000FFFFFF00
*Jan 14 18:04:57.874: IP: s=172.16.13.141 (local), d=172.16.13.132
(FastEthernet0), len 44, sending
*Jan 14 18:04:57.874:     UDP src=3001, dst=3001
*Jan 14 18:04:57.874: IP: s=172.16.13.132 (FastEthernet0),
d=172.16.13.141 (FastEthernet0), len 32, rcvd 3
*Jan 14 18:04:57.874:     UDP src=3001, dst=3001
*Jan 14 18:04:57.874: ISDN Se0:23 SC: RX <-  RRr sapi = 0  tei = 0  nr = 3
*Jan 14 18:04:57.874: IP: s=172.16.13.132 (FastEthernet0),
d=172.16.13.141 (FastEthernet0), len 32, rcvd 3
*Jan 14 18:04:57.874:     UDP src=3001, dst=3001
*Jan 14 18:04:57.874: ISDN Se0:23 SC: RX <-  RRr sapi = 0  tei = 0  nr = 4
*Jan 14 18:04:57.886: IP: s=172.16.13.132 (FastEthernet0),
d=172.16.13.141 (FastEthernet0), len 44, rcvd 3
*Jan 14 18:04:57.886:     UDP src=3001, dst=3001
*Jan 14 18:04:57.886: ISDN Se0:23 SC: RX <-  INFOc sapi = 0
tei = 0  ns = 3  nr = 4  i = 0x430280000B660500FFFFFF00
*Jan 14 18:04:57.886: ISDN Se0:23 SC: TX ->  RRr sapi = 0  tei = 0  nr = 4
*Jan 14 18:04:57.886: IP: s=172.16.13.141 (local), d=172.16.13.132
(FastEthernet0), len 32, sending
*Jan 14 18:04:57.890:     UDP src=3001, dst=3001
*Jan 14 18:04:58.386: IP: s=172.16.13.132 (FastEthernet0),
d=172.16.13.141 (FastEthernet0), len 44, rcvd 3
*Jan 14 18:04:58.386:     UDP src=3001, dst=3001
*Jan 14 18:04:58.386: ISDN Se0:23 SC: RX <-  INFOc sapi = 0
 tei = 0  ns = 4  nr = 4  i = 0x43020000086705000000000
*Jan 14 18:04:58.386: ISDN Se0:23 SC: TX ->  RRr sapi = 0  tei = 0  nr = 5
*Jan 14 18:04:58.390: IP: s=172.16.13.141 (local), d=172.16.13.132
(FastEthernet0), len 32, sending
*Jan 14 18:04:58.390:     UDP src=3001, dst=3001
*Jan 14 18:04:58.390: ISDN Se0:23 SC: TX ->  INFOc sapi = 0
tei = 0  ns = 4  nr = 5  i = 0x43028000096705000000000
*Jan 14 18:04:58.390: IP: s=172.16.13.141 (local), d=172.16.13.132
(FastEthernet0), len 44, sending
*Jan 14 18:04:58.390:     UDP src=3001, dst=3001
*Jan 14 18:04:58.394: IP: s=172.16.13.132 (FastEthernet0), d=172.16.13.141
(FastEthernet0), len 32, rcvd 3
*Jan 14 18:04:58.394:     UDP src=3001, dst=3001
```

```
NAS1#undebug all
All possible debugging has been turned off
NAS1#
NAS1#show rlm group 0
RLM Group 0 Status
 User/Port: RLM_MGR/3000 ISDN/3001
 RLM Version : 2
 Link State: Up         Last Link Status Reported: Up
 Next tx TID: 1         Last rx TID: 0
 Server Link Group[sc1]: Last Reported Priority: HIGH
  link [172.16.13.141(FastEthernet0), 172.16.13.132] = socket[active]
 Server Link Group[sc3]: Last Reported Priority: LOW
  link [172.16.13.141(FastEthernet0), 172.16.13.134] = socket[standby]

RLM Group 0 Timer Values
 open_wait  = 3s               force-down  = 30s
 recovery   = 12s              switch-link = 5s
 minimum-up = 60s              retransmit  = 1s
 keepalive  = 1s

RLM Group 0 Statistics
 Link_up:
     last time occurred at *Jan 14 18:04:54.734, total transition=5
     avg=01:49:34.264, max=05:40:16.976, min=00:00:00.000, latest=00:02:08.728
 Link_down:
     last time occurred at *Jan 14 18:01:58.598, total transition=3
     avg=00:06:36.713, max=00:16:18.004, min=00:00:00.000, latest=00:02:56.136
 Link_recovered:
     last time occurred at *Jan 14 12:03:14.887, success=2(100%), failure=0
     avg=0.004s, max=0.004s, min=0.000s, latest=0.004s
 Link_switched:
     last time occurred at none, success=0(0%), failure=0
     avg=0.000s, max=0.000s, min=0.000s, latest=0.000s
 Server_changed:
     last time occurred at *Jan 14 12:03:14.891 for totally 2 times
 Server Link Group[sc1]:
  Open the link [172.16.13.141(FastEthernet0), 172.16.13.132]:
     last time occurred at *Jan 14 18:04:51.734, success=3(100%), failure=0
     avg=1.002s, max=3.000s, min=0.000s, latest=0.004s
  Echo over link [172.16.13.141(FastEthernet0), 172.16.13.132]:
     last time occurred at *Jan 14 18:05:02.742, success=25590(99%), failure=35
     avg=0.000s, max=0.032s, min=0.000s, latest=0.000s
 Server Link Group[sc3]:
  Open the link [172.16.13.141(FastEthernet0), 172.16.13.134]:
     last time occurred at *Jan 14 18:04:51.734, success=3(100%), failure=0
     avg=1.002s, max=3.000s, min=0.000s, latest=0.004s
  Echo over link [172.16.13.141(FastEthernet0), 172.16.13.134]:
     last time occurred at *Jan 14 18:05:02.742, success=26194(99%), failure=40
     avg=0.000s, max=0.032s, min=0.000s, latest=0.000s

all
All possible debugging has been turned off
NAS1#
NAS1#show isdn stat
Global ISDN Switchtype = primary-ni
ISDN Serial0:23 interface       rlm-group = 0
        dsl 0, interface
   ISDN Switchtype = primary-ni : Primary D channel of nfas group 0
    Layer 1 Status:
        ACTIVE
    Layer 2 Status:
TEI = 0, Ces = 1, SAPI = 0, State = MULTIPLE_FRAME_ESTABLISHED
    Layer 3 Status:
        0 Active Layer 3 Call(s)
```

```
    Active dsl 0 CCBs = 0
    The Free Channel Mask:  0x80FFFFFF
    Total Allocated ISDN CCBs = 0
NAS1#
```

Este é exemplo de debug para a interruptor-sobre do PGW2200 ativo a um PGW2200 à espera.

```
NAS1#show rlm group 0
RLM Group 0 Status
 User/Port: RLM_MGR/3000 ISDN/3001
 RLM Version : 2
 Link State: Up   Last Link Status Reported: Up
 Next tx TID: 1         Last rx TID: 0
 Server Link Group[sc1]: Last Reported Priority: HIGH
  link [172.16.13.141(FastEthernet0), 172.16.13.132] = socket[active]
 Server Link Group[sc3]: Last Reported Priority: LOW
  link [172.16.13.141(FastEthernet0), 172.16.13.134] = socket[standby]

RLM Group 0 Timer Values
 open_wait  = 3s                force-down  = 30s
 recovery   = 12s               switch-link = 5s
 minimum-up = 60s               retransmit  = 1s
 keepalive  = 1s

RLM Group 0 Statistics
 Link_up:
     last time occurred at *Jan 15 17:26:51.635, total transition=1
     avg=00:00:00.000, max=00:00:00.000, min=00:00:00.000, latest=00:00:00.000
 Link_down:
     last time occurred at *Jan 15 17:26:15.635, total transition=1
     avg=00:00:36.000, max=00:00:36.000, min=00:00:00.000, latest=00:00:36.000
 Link_recovered:
     last time occurred at none, success=0(0%), failure=0
     avg=0.000s, max=0.000s, min=0.000s, latest=0.000s
 Link_switched:
     last time occurred at none, success=0(0%), failure=0
     avg=0.000s, max=0.000s, min=0.000s, latest=0.000s
 Server_changed:
     last time occurred at none for totally 0 times
 Server Link Group[sc1]:
  Open the link [172.16.13.141(FastEthernet0), 172.16.13.132]:
     last time occurred at *Jan 15 17:26:45.635, success=1(100%), failure=0
     avg=3.000s, max=3.000s, min=0.000s, latest=3.000s
  Echo over link [172.16.13.141(FastEthernet0), 172.16.13.132]:
     last time occurred at *Jan 15 18:35:57.371, success=4009(99%), failure=1
     avg=0.000s, max=0.068s, min=0.000s, latest=0.000s
 Server Link Group[sc3]:
  Open the link [172.16.13.141(FastEthernet0), 172.16.13.134]:
     last time occurred at *Jan 15 17:26:45.635, success=1(100%), failure=0
     avg=3.000s, max=3.000s, min=0.000s, latest=3.000s
  Echo over link [172.16.13.141(FastEthernet0), 172.16.13.134]:
     last time occurred at *Jan 15 18:35:57.371, success=4149(99%), failure=1
     avg=0.000s, max=0.068s, min=0.000s, latest=0.000s



NAS1#show debug
NAS1#
NAS1#show access-list 199
Extended IP access list 199
    permit ip host 172.16.13.132 host 172.16.13.141
    permit ip host 172.16.13.141 host 172.16.13.132
NAS1#debug rlm group 0 event
```

```
RLM Group Event debugging is on

NAS1#debug rlm group 0 packet
RLM Group Packet debugging is on
NAS1#debug rlm group 0
RLM Group debugging is on
NAS1#debug isdn q921
ISDN Q921 packets debugging is on
NAS1#debug ip packet 199 detail
IP packet debugging is on (detailed) for access list 199
NAS1#terminal monitor
NAS1#

!--- Note the keepalives are exchanged normally. *Jan 15 18:37:20.507: rlm 0: link
[172.16.13.141(FastEthernet0), 172.16.13.132] tx ECHO_REQ(tid=4090) *Jan 15 18:37:20.507: IP:
s=172.16.13.141 (local), d=172.16.13.132 (FastEthernet0), len 36, sending *Jan 15 18:37:20.507:
UDP src=3000, dst=3000 *Jan 15 18:37:20.507: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] tx ECHO_REQ(tid=4232) *Jan 15 18:37:20.507: IP: s=172.16.13.132 (FastEthernet0),
d=172.16.13.141 (FastEthernet0), len 36, rcvd 3 *Jan 15 18:37:20.507: UDP src=3000, dst=3000
*Jan 15 18:37:20.507: rlm 0: link [172.16.13.141(FastEthernet0), 172.16.13.132] rx
ECHO_ACK(tid=4090) *Jan 15 18:37:20.507: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] rx ECHO_ACK(tid=4232) *Jan 15 18:37:21.507: rlm 0: link
[172.16.13.141(FastEthernet0), 172.16.13.132] tx ECHO_REQ(tid=4091) *Jan 15 18:37:21.507: IP:
s=172.16.13.141 (local), d=172.16.13.132 (FastEthernet0), len 36, sending *Jan 15 18:37:21.507:
UDP src=3000, dst=3000 *Jan 15 18:37:21.507: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] tx ECHO_REQ(tid=4233) *Jan 15 18:37:21.511: rlm 0: link
[172.16.13.141(FastEthernet0), 172.16.13.134] rx ECHO_ACK(tid=4233) !--- Note: The NAS gateway
receives !--- an ECHO_REQ from the PGW 2200 !--- when the switch-over occurs. Within the packet,
there is a change in the !--- priority setting and the NAS gateway is informed to re-establish
the link to !--- the new active PGW 2200 (172.16.13.134).


*Jan 15 18:37:21.763: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] rx ECHO_REQ(tid=1)
*Jan 15 18:37:21.763: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] tx ECHO_ACK(tid=1)

*Jan 15 18:37:21.763: rlm 0 server : sc3 changing priority from LOW to HIGH
*Jan 15 18:37:21.763: rlm 0: [State_Up, rx NEW_LINK_WEIGHTING] over
link [172.16.13.141(FastEthernet0), 172.16.13.134]
*Jan 15 18:37:21.763: rlm 0 Link ordering : New Server sc3
*Jan 15 18:37:21.763: rlm 0 Link ordering : Current Server sc1

!--- The NAS gateway starts the link activation !--- toward the new active PGW 2200 and becomes
active. The other !--- link is deactivated and goes into standby. *Jan 15 18:37:21.763: rlm 0:
link [172.16.13.141(FastEthernet0), 172.16.13.134] tx START_REQ(tid=1)
*Jan 15 18:37:21.763: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] requests activation
*Jan 15 18:37:21.767: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] rx START_ACK(tid=1)
*Jan 15 18:37:21.767: rlm 0: [State_Recover, rx START_ACK] over link
[172.16.13.141(FastEthernet0), 172.16.13.134]
*Jan 15 18:37:21.767: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.132] is deactivated
*Jan 15 18:37:21.767: %ISDN-4-RLM_STATUS_CHANGE: ISDN SC Se0:23
SC: Status Changed to: Server Switched.
*Jan 15 18:37:21.767: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] is activated
*Jan 15 18:37:21.767: ISDN Se0:23 SC: TX ->  INFOc sapi = 0  tei = 0
 ns = 4  nr = 4  i = 0x430200000A6808C000000000000000

 !--- The NAS gateway needs to re-establish the ISDN !--- signaling with the new active PGW
2200. *Jan 15 18:37:21.771: ISDN Se0:23 SC: RX <-  SABMEp c/r = 1 sapi = 0  tei = 0
*Jan 15 18:37:22.519: rlm 0: link [172.16.13.141(FastEthernet0),
```

```
172.16.13.132] tx ECHO_REQ(tid=4092)
*Jan 15 18:37:22.519: IP: s=172.16.13.141 (local), d=172.16.13.132
(FastEthernet0), len 36, sending
*Jan 15 18:37:22.519:     UDP src=3000, dst=3000
*Jan 15 18:37:22.523: IP: s=172.16.13.132 (FastEthernet0), d=172.16.13.141
(FastEthernet0), len 64, rcvd 3
*Jan 15 18:37:22.523:     ICMP type=3, code=3
*Jan 15 18:37:22.863:
ISDN Se0:23 SC: RX <-  SABMEp c/r = 1 sapi = 0  tei = 0
*Jan 15 18:37:22.863:
ISDN Se0:23 SC: TX ->  UAf c/r = 1  sapi = 0  tei = 0
*Jan 15 18:37:23.523: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.132] tx ECHO_REQ(tid=4093)
*Jan 15 18:37:23.523: IP: s=172.16.13.141 (local), d=172.16.13.132
(FastEthernet0), len 36, sending
*Jan 15 18:37:23.523:     UDP src=3000, dst=3000

*Jan 15 18:37:24.527: rlm 0: [State_Up, rx LINK_BROKEN] over link
[172.16.13.141(FastEthernet0), 172.16.13.132]
*Jan 15 18:37:24.527: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.132] tx ECHO_REQ(tid=4094)
*Jan 15 18:37:24.527: IP: s=172.16.13.141 (local), d=172.16.13.132
(FastEthernet0), len 36, sending
*Jan 15 18:37:24.527:     UDP src=3000, dst=3000

*Jan 15 18:37:24.527: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] tx ECHO_REQ(tid=4234)
*Jan 15 18:37:24.527: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] rx ECHO_ACK(tid=4234)
*Jan 15 18:37:25.527: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] tx ECHO_REQ(tid=4235)
*Jan 15 18:37:25.527: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] rx ECHO_ACK(tid=4235)
*Jan 15 18:37:26.527: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] tx ECHO_REQ(tid=4236)
*Jan 15 18:37:26.527: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] rx ECHO_ACK(tid=4236)
*Jan 15 18:37:27.527: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.132] tx ECHO_REQ(tid=4095)
*Jan 15 18:37:27.527: IP: s=172.16.13.141 (local), d=172.16.13.132
(FastEthernet0), len 36, sending
*Jan 15 18:37:27.527:     UDP src=3000, dst=3000
*Jan 15 18:37:27.527: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] tx ECHO_REQ(tid=4237)
*Jan 15 18:37:27.531: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] rx ECHO_ACK(tid=4237)
*Jan 15 18:37:28.531: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] tx ECHO_REQ(tid=4238)
*Jan 15 18:37:28.531: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] rx ECHO_ACK(tid=4238)
*Jan 15 18:37:29.531: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] tx ECHO_REQ(tid=4239)
*Jan 15 18:37:29.531: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] rx ECHO_ACK(tid=4239)
*Jan 15 18:37:30.527: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.132] tx ECHO_REQ(tid=4096)
*Jan 15 18:37:30.527: IP: s=172.16.13.141 (local), d=172.16.13.132
(FastEthernet0), len 36, sending
*Jan 15 18:37:30.527:     UDP src=3000, dst=3000
*Jan 15 18:37:30.531: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] tx ECHO_REQ(tid=4240)
*Jan 15 18:37:30.531: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] rx ECHO_ACK(tid=4240)
*Jan 15 18:37:31.531: rlm 0: link [172.16.13.141(FastEthernet0),
```

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172.16.13.134] tx ECHO_REQ(tid=4241)
*Jan 15 18:37:31.531: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] rx ECHO_ACK(tid=4241)
*Jan 15 18:37:31.767: ISDN Se0:23 SC: TX ->  INFOc sapi = 0  tei = 0
ns = 0  nr = 0  i = 0x430200000A6808C000000000000000
*Jan 15 18:37:31.767: ISDN Se0:23 SC: RX <-  RRr sapi = 0  tei = 0  nr = 1
*Jan 15 18:37:31.783: ISDN Se0:23 SC: RX <-  INFOc sapi = 0  tei = 0  ns = 0
nr = 1  i = 0x430280000A6808C000000000000000
*Jan 15 18:37:31.783: ISDN Se0:23 SC: TX ->  RRr sapi = 0  tei = 0  nr = 1
*Jan 15 18:37:31.783: ISDN Se0:23 SC: TX ->  INFOc sapi = 0  tei = 0  ns = 1
 nr = 1  i = 0x43020000066660500FFFFFF00
*Jan 15 18:37:31.787: ISDN Se0:23 SC: RX <-  RRr sapi = 0  tei = 0  nr = 2
*Jan 15 18:37:31.803: ISDN Se0:23 SC: RX <-  INFOc sapi = 0  tei = 0  ns = 1
nr = 2  i = 0x430280000B660500FFFFFF00
*Jan 15 18:37:31.803: ISDN Se0:23 SC: TX ->  RRr sapi = 0  tei = 0  nr = 2
*Jan 15 18:37:33.527: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.132] tx ECHO_REQ(tid=4097)
*Jan 15 18:37:33.527: IP: s=172.16.13.141 (local), d=172.16.13.132
(FastEthernet0), len 36, sending
*Jan 15 18:37:33.527:     UDP src=3000, dst=3000
*Jan 15 18:37:33.535: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] tx ECHO_REQ(tid=4242)
*Jan 15 18:37:33.539: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] rx ECHO_ACK(tid=4242)
*Jan 15 18:37:34.539: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] tx ECHO_REQ(tid=4243)
*Jan 15 18:37:34.539: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] rx ECHO_ACK(tid=4243)
*Jan 15 18:37:35.283: ISDN Se0:23 SC: RX <-  INFOc sapi = 0  tei = 0
ns = 2  nr = 2  i = 0x43020000086705000000000
*Jan 15 18:37:35.283: ISDN Se0:23 SC: TX ->  RRr sapi = 0  tei = 0  nr = 3
*Jan 15 18:37:35.283: ISDN Se0:23 SC: TX ->  INFOc sapi = 0  tei = 0
ns = 2  nr = 3  i = 0x43028000096705000000000
*Jan 15 18:37:35.287: ISDN Se0:23 SC: RX <-  RRr sapi = 0  tei = 0  nr = 3
*Jan 15 18:37:36.527: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.132] tx ECHO_REQ(tid=4098)
*Jan 15 18:37:36.527: IP: s=172.16.13.141 (local), d=172.16.13.132
(FastEthernet0), len 36, sending
*Jan 15 18:37:36.527:     UDP src=3000, dst=3000
*Jan 15 18:37:36.539: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] tx ECHO_REQ(tid=4244)
*Jan 15 18:37:36.539: rlm 0: link [172.16.13.141(FastEthernet0),
172.16.13.134] rx ECHO_ACK(tid=4244)
NAS1#
NAS1#undebug all
All possible debugging has been turned off
NAS1#show rlm group 0
RLM Group 0 Status
 User/Port: RLM_MGR/3000 ISDN/3001
 RLM Version : 2
 Link State: Up  Last Link Status Reported: Server_Switched
 !--- Indicates the link change caused by the switch-over. Next tx TID: 2 Last rx TID: 0 Server
Link Group[sc1]: Last Reported Priority: LOW link [172.16.13.141(FastEthernet0), 172.16.13.132]
= socket[standby] Server Link Group[sc3]: Last Reported Priority: HIGH link
[172.16.13.141(FastEthernet0), 172.16.13.134] = socket[active] RLM Group 0 Timer Values
open_wait = 3s force-down = 30s recovery = 12s switch-link = 5s minimum-up = 60s retransmit = 1s
keepalive = 1s RLM Group 0 Statistics Link_up: last time occurred at *Jan 15 18:37:21.767, total
transition=2 avg=01:10:30.132, max=01:10:30.132, min=00:00:00.000, latest=01:10:30.132
Link_down: last time occurred at *Jan 15 17:26:15.635, total transition=1 avg=00:00:36.000,
max=00:00:36.000, min=00:00:00.000, latest=00:00:36.000 Link_recovered: last time occurred at
*Jan 15 18:37:21.767, success=1(100%), failure=0 avg=0.000s, max=0.000s, min=0.000s,
latest=0.000s Link_switched: last time occurred at none, success=0(0%), failure=0 avg=0.000s,
max=0.000s, min=0.000s, latest=0.000s Server_changed: last time occurred at *Jan 15 18:37:21.767
for totally 1 times Server Link Group[sc1]: Open the link [172.16.13.141(FastEthernet0),
```

```
172.16.13.132]: last time occurred at *Jan 15 17:26:45.635, success=1(100%), failure=0
avg=3.000s, max=3.000s, min=0.000s, latest=3.000s Echo over link [172.16.13.141(FastEthernet0),
172.16.13.132]: last time occurred at *Jan 15 18:38:17.527, success=4111(99%), failure=15
avg=0.000s, max=0.068s, min=0.000s, latest=0.000s Server Link Group[sc3]: Open the link
[172.16.13.141(FastEthernet0), 172.16.13.134]: last time occurred at *Jan 15 17:26:45.635,
success=1(100%), failure=0 avg=3.000s, max=3.000s, min=0.000s, latest=3.000s Echo over link
[172.16.13.141(FastEthernet0), 172.16.13.134]: last time occurred at *Jan 15 18:38:17.543,
success=4284(99%), failure=1 avg=0.000s, max=0.068s, min=0.000s, latest=0.000s NAS1#show isdn
status
Global ISDN Switchtype = primary-ni
ISDN Serial0:23 interface       rlm-group = 0
        dsl 0, interface ISDN Switchtype = primary-ni : Primary D
         channel of nfas group 0
    Layer 1 Status:
        ACTIVE
    Layer 2 Status:
        TEI = 0, Ces = 1, SAPI = 0, State = MULTIPLE_FRAME_ESTABLISHED
    Layer 3 Status:
        0 Active Layer 3 Call(s)
    Active dsl 0 CCBs = 0
    The Free Channel Mask:  0x80FFFFFF
    Total Allocated ISDN CCBs = 0
NAS1#
```

Determine a natureza de um problema e isole então o problema a um dispositivo particular ou a um componente para pesquisar defeitos. Use estas ferramentas para isolar o problema:

- Comandos mml recuperar os alarmes relatados, a configuração, e executar o rastreamento de chamada.
- Reveja o arquivo do Syslog (/opt/CiscoMGC/var/log/platform.log) para indícios ao problema.
- Gire **debugam** sobre o modo com certeza nos processos PGW2200 (tais como o motor ou o ISDN PRI sobre o [PRIIP] IP).
- Use a ferramenta do Snooper ao sniffer o pacote IP entre o PGW2200 e o gateway NAS.

Use a RTRV-**esmola do** comando mml para ver todos os alarmes que o sistema experimentar. Mais comando útil usar-se é a RTRV-**esmola:: cont** para escutar continuamente alguns alarmes da corrente que forem relatados. A maioria de informação util é o arquivo de platform.log sob o diretório de /opt/CiscoMGC/var/log/. Este arquivo contém toda a informação do sistema. Desde que este arquivo pôde ser muito grande, usar o **grep do** comando unix para procurar e o analisar gramaticalmente através do arquivo.

As palavras-chave a procurar pesquisar defeitos o ISDN e o RLM são o IOCC-PRIIP, que é o controlador de canal I/O para o PRIIP. Um outro método é usar o **tail -f platform.log** sob o diretório de /opt/CIscoMGC/var/log/ monitora continuamente no tempo real todo o Mensagem de Erro que aparecer. Você pode ajustar o PGW2200 no modo debugging. Ajuste o processo PRIIP no modo debugging e o olhar mais profundo nos fluxos de pacote de informação dentro do PGW2200.

A outra ferramenta que você pode se usar é o Snooper de Cisco. Pode monitorar (no tempo real) tipos diferentes de protocolos (por exemplo, RLM, SS7, ISDN, e H.225) que IP sobre executado. É como um sniffer conectado fora do segmento de Ethernet para monitorar todos os tipos de tráfego. Este papel não cobre o procedimento de Troubleshooting usando a ferramenta do Snooper de Cisco.

Esta é algumas saídas de exemplo do PGW2200. Na operação normal, há uma comunicação constante entre o gateway NAS e o PGW2200. Os mensagens de keepalive podem ser monitorados no PGW2200. Permita o PGW2200 de ter o processo PRIIP no modo debugging com o comando mml **set-log:prrip-01:debug,confirm**.

```
sc1 mml>rtrv-ne
   MGC-01 - Media Gateway Controller 2002-01-15 21:48:14
M  RTRV
   "Type:MGC"
   "Hardware platform:sun4u sparc SUNW,Ultra-60"
   "Vendor:"Cisco Systems, Inc.""
   "Location:MGC-01 - Media Gateway Controller"
   "Version:"7.4(11)""
   "Platform State:ACTIVE"
   ;
sc1 mml>help:set-log
   MGC-01 - Media Gateway Controller 2002-01-15 21:48:26
M  RTRV



                        SET-LOG -- Set Logging Levels
                        -----------------------------

   Purpose:      This MML command is used to set the logging level of a
                 process or all processes.

   Format:       set-log::
                 set-log:all:

   Input         * proc -- The various actively and passively monitored
   Description:    processes running on the MGC.  Use the RTRV-SOFTW:ALL
                   command to display all processes.

                 * log level -- Sets the logging level for the specified
                   process.  Logging levels are as follows:

                     -  CRIT  -- Critical level messages.

                     -  ERR   -- Error condition messages.

                     -  WARN  -- Warning condition messages.

                     -  INFO  -- Informational messages.

                     -  TRACE -- Trace messages.

                     -  DEBUG -- Debug-level messages (lowest level). A CONFIRM
                                 parameter is required for the DEBUG log level.
sc1 mml>rtrv-softw:all
   MGC-01 - Media Gateway Controller 2002-01-15 21:49:00
M  RTRV
   "CFM-01:RUNNING ACTIVE"
   "ALM-01:RUNNING ACTIVE"
   "MM-01:RUNNING ACTIVE"
   "AMDMPR-01:RUNNING ACTIVE"
   "CDRDMPR-01:RUNNING ACTIVE"
   "DSKM-01:RUNNING IN N/A STATE"
   "MMDB-01:RUNNING IN N/A STATE"
   "POM-01:RUNNING ACTIVE"
   "MEASAGT:RUNNING ACTIVE"
   "OPERSAGT:RUNNING ACTIVE"
   "PROVSAGT:RUNNING ACTIVE"
   "priip-1:RUNNING IN N/A STATE"
!--- This is the process which is set !--- to debug mode. "Replic-01:RUNNING ACTIVE" "ENG-
01:RUNNING ACTIVE" "IOCM-01:RUNNING ACTIVE" "TCAP-01:RUNNING IN N/A STATE" "ss7-a-1:RUNNING IN
N/A STATE" "FOD-01:RUNNING IN N/A STATE" "LOG-01:RUNNING IN N/A STATE" ; sc1 mml>set-log:priip-
```

```
1:debug,confirm
!--- MML command for PRIIP process !--- in debug mode. MGC-01 - Media Gateway Controller 2002-
01-15 21:49:30 M COMPLD "priip-1" ; sc1 mml>quit
```

Aqui, os mensagens de keepalive normais RLM são trocados entre o gateway NAS e o PGW2200.

```
sc1% tail -f platform.log
!--- UNIX command used to monitor messages logged !--- to the platform.log file. !--- UPD Srv is
the ECHO_REQ received from the !--- NAS gateway on UDP port 3000. !--- IoSendUdp is the ECHO_ACK
sent back from the PGW 2200 to the !--- NAS gateway on UDP port 3000. Tue Jan 15 21:49:41:149
2002 | priip-1 (PID 18408) <Debug> UDP Srv (ff100001) 8 bytes 172.16.13.141:3000 !--- ECHO_REQ
received from the NAS gateway (172.16.13.141). !--- Note the Hex dump (02 05 00 08 38 2c 00 01)
!--- 02 = RLM version 05 = echo_req 00 08 = packet length 0x382c = tid. Tue Jan 15 21:49:41:149
2002 | priip-1 (PID 18408) <Trace> PROT_TRACE_RLM_PDU: Hex dump of RLM messages ff100001 0
(8) 02 05 00 08 38 2c 00 01
Tue Jan 15 21:49:41:149 2002 | priip-1 (PID 18408) <Debug>
ioSendUdp: Server  fd 8 Dsl 0 IP 172.16.13.141:3000
 !--- ECHO_ACK sent back from PGW 2200 to the NAS gateway. !--- Note the Hex dump (02 06 00 08
38 2c 00 02) !--- 0x02 = RLM version 0x06 = echo_ack 0x0008 = packet length 0x382c = tid. Tue
Jan 15 21:49:41:149 2002 | priip-1 (PID 18408) PROT_TRACE_RLM_PDU: Hex dump of RLM messages
ff100001 1 (8)
02 06 00 08 38 2c 00 02
```

Esta saída é o mensagem de keepalive normal ISDN entre o gateway NAS e o PGW2200.

```
!--- UPD Srv is the ISDN RRp keepalive !--- received from the NAS gateway on UDP port 3001. !---
IoSendUdp is the ISDN RRf keepalive sent back from the PGW 2200 !--- to the NAS gateway on UDP
port 3001. Tue Jan 15 23:05:32:890 2002 | priip-1 (PID 18408) <Debug> UDP Srv (00100001) 4 bytes
172.16.13.141:3001

Tue Jan 15 23:05:32:890 2002 | priip-1 (PID 18408) <Trace>
PROT_TRACE_Q921_PDU: Hex dump of Q921 messages 100001 0 (4) 00 01 01 0b

Tue Jan 15 23:05:32:890 2002 | priip-1 (PID 18408) <Debug>
[ LINK 1 24 0 STATE 3 EVENT RR ]

Tue Jan 15 23:05:32:890 2002 | priip-1 (PID 18408) <Debug>
ioSendUdp: Server  fd 9 Dsl 1 IP 172.16.13.141:3001

Tue Jan 15 23:05:32:890 2002 | priip-1 (PID 18408) <Trace>
PROT_TRACE_Q921_PDU: Hex dump of Q921 messages 100001 1 (4) 00 01 01 0b
```

Este é um exemplo da sinalização ISDN anormal. O keepalive não é recebido pelo PGW2200 do gateway NAS.

```
!--- UPD Srv is the ISDN RRp keepalive !--- received from the NAS gateway on UDP port 3001. !---
IoSendUdp is the ISDN RRf keepalive sent back from the PGW 2200 !--- to the NAS gateway on UDP
port 3001. Tue Jan 15 23:05:32:890 2002 | priip-1 (PID 18408) <Debug> UDP Srv (00100001) 4 bytes
172.16.13.141:3001

Tue Jan 15 23:05:32:890 2002 | priip-1 (PID 18408) <Trace>
PROT_TRACE_Q921_PDU: Hex dump of Q921 messages 100001 0 (4) 00 01 01 0b

Tue Jan 15 23:05:32:890 2002 | priip-1 (PID 18408) <Debug>
[ LINK 1 24 0 STATE 3 EVENT RR ]

Tue Jan 15 23:05:32:890 2002 | priip-1 (PID 18408) <Debug>
```

```
ioSendUdp: Server  fd 9 Dsl 1 IP 172.16.13.141:3001

Tue Jan 15 23:05:32:890 2002 | priip-1 (PID 18408) <Trace>
PROT_TRACE_Q921_PDU: Hex dump of Q921 messages 100001 1 (4) 00 01 01 0b
```

Esta seção é a captação **debugar** para o PGW2200 quando o canal D é trazido para trás em serviço (nenhuma parada programada).

Nota: Os comentários são numerados enquanto uma referência à correspondência debuga no gateway NAS.

O PGW2200 debuga

```
!--- UPD Srv is the ISDN RRp keepalive !--- received
from the NAS gateway on UDP port 3001. !--- IoSendUdp is
the ISDN RRf keepalive sent back from the PGW 2200 !---
to the NAS gateway on UDP port 3001. Tue Jan 15
23:05:32:890 2002 | priip-1 (PID 18408) <Debug> UDP Srv
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Tue Jan 15 23:05:32:890 2002 | priip-1 (PID 18408)
<Trace>
PROT_TRACE_Q921_PDU: Hex dump of Q921 messages 100001 0
(4) 00 01 01 0b

Tue Jan 15 23:05:32:890 2002 | priip-1 (PID 18408)
<Debug>
[ LINK 1 24 0 STATE 3 EVENT RR ]

Tue Jan 15 23:05:32:890 2002 | priip-1 (PID 18408)
<Debug>
ioSendUdp: Server  fd 9 Dsl 1 IP 172.16.13.141:3001

Tue Jan 15 23:05:32:890 2002 | priip-1 (PID 18408)
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PROT_TRACE_Q921_PDU: Hex dump of Q921 messages 100001 1
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23:05:32:890 2002 | priip-1 (PID 18408) <Debug> UDP Srv
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<Trace>
PROT_TRACE_Q921_PDU: Hex dump of Q921 messages 100001 0
(4) 00 01 01 0b

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[ LINK 1 24 0 STATE 3 EVENT RR ]

Tue Jan 15 23:05:32:890 2002 | priip-1 (PID 18408)
<Debug>
ioSendUdp: Server  fd 9 Dsl 1 IP 172.16.13.141:3001
```

```
Tue Jan 15 23:05:32:890 2002 | priip-1 (PID 18408)
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```
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```

```
PROT_TRACE_Q921_PDU: Hex dump of Q921 messages 100001 1
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<Debug>
[ LINK 1 24 0 STATE 3 EVENT RR ]

Tue Jan 15 23:05:32:890 2002 | priip-1 (PID 18408)
<Debug>
ioSendUdp: Server  fd 9 Dsl 1 IP 172.16.13.141:3001

Tue Jan 15 23:05:32:890 2002 | priip-1 (PID 18408)
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PROT_TRACE_Q921_PDU: Hex dump of Q921 messages 100001 1
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!--- UPD Srv is the ISDN RRp keepalive !--- received
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Esta saída do comando é uma duplicata do comando precedente output do lado NAS. Observe os comentários numerados correspondentes.

NAS

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  ISDN Q921 packets debug DSLs. (On/Off/No DSL:1/0/-)
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NAS1#configure terminal
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NAS1(config)#interface s0:23
NAS1(config-if)#no shut
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0, channel 23 with index 0
Jan 16 17:02:47.310: %LINK-3-UPDOWN: Interface
Serial0:23, changed state to up
Jan 16 17:02:47.310: ISDN Se0:23 SC: TX ->  SABMEp c/r =
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Jan 16 17:02:45.310: %CSM-5-PRI: add PRI at slot 0, unit
0, channel 23 with index 0
Jan 16 17:02:47.310: %LINK-3-UPDOWN: Interface
Serial0:23, changed state to up
Jan 16 17:02:47.310: ISDN Se0:23 SC: TX ->  SABMEp c/r =
0 sapi = 0  tei = 0
 !--- 1. The NAS tries to re-establish the ISDN link.
Jan 16 17:02:47.314: ISDN Se0:23 SC: RX <- UAf c/r = 0
sapi = 0 tei = 0
```

```
NAS1#show debug
ISDN:
  ISDN Q921 packets debugging is on
```

```
  ISDN Q931 packets debugging is on
  ISDN Q921 packets debug DSLs. (On/Off/No DSL:1/0/-)
  DSL  0 --> 7
  1 - - - - - - -

  ISDN Q931 packets debug DSLs. (On/Off/No DSL:1/0/-)
  DSL  0 --> 7
  1 - - - - - - -

NAS1#configure terminal
Enter configuration commands, one per line.  End with
CNTL/Z.
NAS1(config)#interface s0:23
NAS1(config-if)#no shut
NAS1(config-if)#
Jan 16 17:02:45.310: %CSM-5-PRI: add PRI at slot 0, unit
0, channel 23 with index 0
Jan 16 17:02:47.310: %LINK-3-UPDOWN: Interface
Serial0:23, changed state to up
Jan 16 17:02:47.310: ISDN Se0:23 SC: TX ->  SABMEp c/r =
0 sapi = 0  tei = 0
 !--- 1. The NAS tries to re-establish the ISDN link.
Jan 16 17:02:47.314: ISDN Se0:23 SC: RX <- UAf c/r = 0
sapi = 0 tei = 0
```

```
NAS1#show debug
ISDN:
  ISDN Q921 packets debugging is on
  ISDN Q931 packets debugging is on
  ISDN Q921 packets debug DSLs. (On/Off/No DSL:1/0/-)
  DSL  0 --> 7
  1 - - - - - - -

  ISDN Q931 packets debug DSLs. (On/Off/No DSL:1/0/-)
  DSL  0 --> 7
  1 - - - - - - -

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Enter configuration commands, one per line.  End with
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NAS1(config-if)#no shut
NAS1(config-if)#
Jan 16 17:02:45.310: %CSM-5-PRI: add PRI at slot 0, unit
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Jan 16 17:02:47.310: %LINK-3-UPDOWN: Interface
Serial0:23, changed state to up
Jan 16 17:02:47.310: ISDN Se0:23 SC: TX ->  SABMEp c/r =
0 sapi = 0  tei = 0
 !--- 1. The NAS tries to re-establish the ISDN link.
Jan 16 17:02:47.314: ISDN Se0:23 SC: RX <- UAf c/r = 0
sapi = 0 tei = 0
```

```
NAS1#show debug
ISDN:
  ISDN Q921 packets debugging is on
  ISDN Q931 packets debugging is on
  ISDN Q921 packets debug DSLs. (On/Off/No DSL:1/0/-)
```

```
  DSL  0 --> 7
  1 - - - - - - -

  ISDN Q931 packets debug DSLs. (On/Off/No DSL:1/0/-)
  DSL  0 --> 7
  1 - - - - - - -

NAS1#configure terminal
Enter configuration commands, one per line.  End with
CNTL/Z.
NAS1(config)#interface s0:23
NAS1(config-if)#no shut
NAS1(config-if)#
Jan 16 17:02:45.310: %CSM-5-PRI: add PRI at slot 0, unit
0, channel 23 with index 0
Jan 16 17:02:47.310: %LINK-3-UPDOWN: Interface
Serial0:23, changed state to up
Jan 16 17:02:47.310: ISDN Se0:23 SC: TX ->  SABMEp c/r =
0 sapi = 0  tei = 0
 !--- 1. The NAS tries to re-establish the ISDN link.
Jan 16 17:02:47.314: ISDN Se0:23 SC: RX <- UAf c/r = 0
sapi = 0 tei = 0
```

```
NAS1#show debug
ISDN:
  ISDN Q921 packets debugging is on
  ISDN Q931 packets debugging is on
  ISDN Q921 packets debug DSLs. (On/Off/No DSL:1/0/-)
  DSL  0 --> 7
  1 - - - - - - -

  ISDN Q931 packets debug DSLs. (On/Off/No DSL:1/0/-)
  DSL  0 --> 7
  1 - - - - - - -

NAS1#configure terminal
Enter configuration commands, one per line.  End with
CNTL/Z.
NAS1(config)#interface s0:23
NAS1(config-if)#no shut
NAS1(config-if)#
Jan 16 17:02:45.310: %CSM-5-PRI: add PRI at slot 0, unit
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Serial0:23, changed state to up
Jan 16 17:02:47.310: ISDN Se0:23 SC: TX ->  SABMEp c/r =
0 sapi = 0  tei = 0
 !--- 1. The NAS tries to re-establish the ISDN link.
Jan 16 17:02:47.314: ISDN Se0:23 SC: RX <- UAf c/r = 0
sapi = 0 tei = 0
```

RESYNC_REQ/RESYNC_RESP

As mensagens RESYNC_REQ/RESYNC_RESP são usadas ao ponto de verificação os estados da chamada entre o PGW2200 e as NASes. Estas mensagens são geradas tipicamente depois que a interruptor-sobre o evento para determinar se alguma discrepância ocorreu nos estados da chamada. Estas mensagens são usadas para restabelecer um visualização consistente dos estados da chamada de canal no PGW2200 e no gateway NAS para impedir todo o cair possível CIC.

Mensagem de serviço do grupo

Similar à mensagem do RESYNC, os mensagens de serviço do grupo usam uma única mensagem pelo canal D para indicar o estado do serviço (IS/OOS) de todos os canais B associados. O NAS inicia a operação de serviço do grupo. As ações são tomadas no lado PGW2200 para manter a consistência dos estados de canal baseados no resultado de comparar o estado de cada canal. Quando o PGW2200 recebe esta mensagem, manda o bloco do grupo de circuito SS7 ISUP (CGB/CGBA) e o grupo de circuito desbloqueia (CGU/CGUA) para corresponder às indicações do serviço do canal B dos mensagens de serviço do grupo. Além, o reconhecimento ao mensagem de serviço do grupo do NAS não ocorre até que o gateway de sinalização receba um CGBA ou um CGUA do interruptor PSTN.

Nas soluções de gateway de voz configuração da interconexão do Cisco SS7, os canais do portador de um NAS são acoplados (pregado acima de) aos portadores SS7. Antes, o motor PGW2200 segurou mensagens de serviço individuais cada NAS ajustando estados do serviço do canal do portador. Quando muitos canais em um NAS mudam o estado simultaneamente, os mensagens de serviço resultantes podem inundar o interruptor se são enviados individualmente. Um mensagem de serviço do grupo enviado do NAS informa eficientemente o motor do estado de todos os canais do portador. O motor deve descodificar esta mensagem, para mudar o estado de cada canal do portador NI-2, e para propagar as mudanças ao lado SS7, de que o bloco correspondente e desbloqueia o gerenciamento de canal que as mensagens (CGB/CGBA e CGU/CGUA) devem ser enviadas. Isto permite a eficiência máxima. As ajudas deste mensagem de serviço do grupo (GS) minimizam o número de transações do mensagem de reconhecimento SERVICE/SERVICE no caso de mais de um canal (ou de relação) que estão sendo tomados em fora de serviço ou em em serviço. Os mensagens de serviço do grupo podem segurar até trinta relações de cada vez.

Se você encontra quaisquer problemas, recolha um farejador de rastreamento SS7/NI2+ RLM:

- **Recolha os farejadores de rastreamento snoop/NI2+/RLM/-SS7**

Esta seção alista diversos métodos para recolher farejadores de rastreamento. Qual você escolhe depende sobre se você tem o Cisco Packet Telephony Center Monitoring e Troubleshooting (PTC-MT) instalado ou estão executando uma versão velha do snooper de Cisco. O snooper de Cisco pode dar uma boa compreensão do fluxo de chamadas do SS7-SIP.

- Você pode emitir o **comando snoop em** todas as plataformas Solaris. O início de uma sessão como o superuser e emite este comando recolher a informação da **espião de** UNIX:

  ```
  snoop  -o snoop.log IP address
  Ctrl C     - to exit snoop
  ```

  Transfira arquivos pela rede o arquivo de snoop.log às notas de caso.**Nota:** Explique nas notas de caso que este arquivo esteve capturado com o uso do **comando snoop de** UNIX.
- Execute o aplicativo espião Cisco. Entre como um superuser e emita o **comando list da RELAÇÃO PARMS de ./snooper int** ou a corrida **./snooper** recolher a informação de espião Cisco, que lhe dá uma descrição direta.

  ```
  ./snooper int hme'x' ni2+ rlm ss7  > snooper_int1
  !--- Where 'x' is the interface number, which you can also find !--- by issuing the ifconfig
  -a command.
  ```

  Transfira arquivos pela rede o arquivo snooper_int1 às notas de caso.
- Execute o PTC-MT.A fim recolher a informação PTC-MT, entre como um superuser e emita o

comando list da RELAÇÃO PARMS de ./ptcmt int ou a corrida **./snooper**, que lhe dão uma descrição direta.

```
./ptcmt int hme'x' ni2+ rlm ss7  > snooper_int1
!--- Where 'x' is the interface number, which you can also find !--- by issuing the ifconfig
-a command.
```

Transfira arquivos pela rede o arquivo snooper_int1 às notas de caso.

- No NAS do Cisco IOS, emita o **status de ISDN da mostra dos** comandos ios, **mostre o grupo "x" do rlm**, e **debugar o q931 de ISDN**.

Scenarios de Troubleshooting PGW2200 e NAS

Esta seção fornece detalhes e scenarios de Troubleshooting para Cisco PGW2200 em combinação com o NAS de Cisco.

Ethernet e FastEthernet para baixo no NAS de Cisco

Emita a RTRV-**esmola do** comando mml em Cisco PGW2200 para encontrar a razão da falha. Nesta encenação, os Ethernet e FastEthernet estão para baixo no hostname v5300-2 NAS. Isto conduz ao 'signas1 que é inacessível.

```
PGW2200a mml> rtrv-alms
   MGC-02 - Media Gateway Controller 2004-07-29 05:14:38.471 GMT
M  RTRV
   "iplnk1-v5300-2: 2004-07-29 05:06:05.870 GMT,ALM=\"SC FAIL\",SEV=MJ"
   "iplnk2-v5300-2: 2004-07-29 05:05:06.671 GMT,ALM=\"SC FAIL\",SEV=MJ"
   "signas1: 2004-07-29 05:06:05.871 GMT,ALM=\"FAIL\",SEV=MJ"
   ;
PGW2200a mml>
```

Neste caso os Ethernet e o FastEthernet do NAS v5300-2 de Cisco reagem do modo de fechamento, e ambos os soquetes são fechados.

```
V5300-2#show
RLM Group 0 Status
 User/Port: RLM_MGR/3000 ISDN/3001
RLM WATCHER:
 RLM Version : 2
 Link State: Down       Last Link Status Reported: Down
 Next tx TID: 0         Last rx TID: 0
 Server Link Group[demask]: Last Reported Priority: LOW
  link [10.48.85.187(FastEthernet0), 10.48.85.24] = socket[closed]
  link [10.48.84.187(Ethernet0), 10.48.84.24] = socket[closed]
 Server Link Group[mgc-bru-3a]: Last Reported Priority: HIGH
  link [10.48.85.187(FastEthernet0), 10.48.85.65] = socket[closed]
  link [10.48.84.187(Ethernet0), 10.48.84.65] = socket[closed]

RLM Group 0 Timer Values
 open_wait   = 3s                force-down   = 30s
 recovery    = 16s               switch-link = 10s
 minimum-up = 60s                retransmit   = 2s
 keepalive   = 2s
```

Você pode verificar o Mensagem de Erro de platform.log sob o diretório de /opt/CiscoMGC/var/log

através deste comando unix. Para uma informação de Mensagem de Erro mais adicional de Cisco PGW2200, refira a documentação dos mensagens de registro.

```
tail -f platform.log
Thu Jul 29 05:27:40:190 2004 GMT | priip-1 (PID 16498) <Error>
PROT_ERR_RLM_DATA_RCV: No data received for RLM link iplnk1-v5300-2[00100001]

Thu Jul 29 05:27:41:060 2004 GMT | priip-1 (PID 16498) <Error>
PROT_ERR_RLM_DATA_RCV: No data received for RLM link iplnk2-v5300-2[00100002]

Thu Jul 29 05:27:43:662 2004 GMT | engine (PID 16491) <Error>
CP_ERR_GET_SIGPATH_FOR_CALLSIDE: cmgProtocolAdapter::newCall:  UCID=00000003,
OSigPath=00150001, OTG=*NA*, OSPAN=*NA*, OTS/CIC=1,
TSigPath=00140001, TTG=*NA*, TSPAN=*NA*, TTS/CIC=0,
: failed to get sigPath for callside 2

!--- Note: OSigPath = 00150001 are the "ss7path". !--- TSigPath=00140001 are the "iplnk1-v5300-
2", "iplnk2-v5300-2" - "signas1"


Thu Jul 29 05:27:43:662 2004 GMT | engine (PID 16491) <Error>
CP_ERR_BC_INSV: cmgProtocolAdapter::setChanAsTermLeg:  UCID=00000003,
OSigPath=00150001, OTG=*NA*, OSPAN=*NA*, OTS/CIC=1,
TSigPath=00140001, TTG=*NA*, TSPAN=0, TTS/CIC=1,
 Bear channel is not inservice

Thu Jul 29 05:31:06:712 2004 GMT | engine (PID 16491) <Error>
CP_ERR_MAN_BC_BLK: cmgProtocolAdapter::setChanAsTermLeg:  UCID=00000004,
OSigPath=00150001, OTG=*NA*, OSPAN=*NA*, OTS/CIC=1,
TSigPath=00140001, TTG=*NA*, TSPAN=0, TTS/CIC=1,
 Bear channel is manual blocked
!--- Note: The RLM link goes down and SS7 - !--- Circuit Group Blocking Message (CBG) !---
messages are sent.
```

Problema de conectividade IP no link ativo - mensagem recuperada “relação”

```
V5300-2#show rlm group 0
RLM Group 0 Status
 User/Port: RLM_MGR/3000 ISDN/3001
RLM WATCHER:
 RLM Version : 2
 Link State: Up          Last Link Status Reported: Up
 Next tx TID: 1          Last rx TID: 0
 Server Link Group[demask]: Last Reported Priority: LOW
  link [10.48.85.187(FastEthernet0), 10.48.85.24] = socket[standby]
  link [10.48.84.187(Ethernet0), 10.48.84.24] = socket[standby]
 Server Link Group[mgc-bru-3a]: Last Reported Priority: HIGH
  link [10.48.85.187(FastEthernet0), 10.48.85.65] = socket[active]
  link [10.48.84.187(Ethernet0), 10.48.84.65] = socket[standby]
```

Neste caso FastEthernet0 é o link ativo. Contudo, em um determinado momento, há uma conectividade IP e um problema de cabo. Isto conduz a esta mensagem em Cisco PGW2200 para patform.log:

```
V5300-2#show rlm group 0
RLM Group 0 Status
 User/Port: RLM_MGR/3000 ISDN/3001
RLM WATCHER:
```

```
 RLM Version : 2
 Link State: Up         Last Link Status Reported: Up
 Next tx TID: 1         Last rx TID: 0
 Server Link Group[demask]: Last Reported Priority: LOW
  link [10.48.85.187(FastEthernet0), 10.48.85.24] = socket[standby]
  link [10.48.84.187(Ethernet0), 10.48.84.24] = socket[standby]
 Server Link Group[mgc-bru-3a]: Last Reported Priority: HIGH
  link [10.48.85.187(FastEthernet0), 10.48.85.65] = socket[active]
  link [10.48.84.187(Ethernet0), 10.48.84.65] = socket[standby]
```

No Gateway de IOS, há esta mensagem:

```
V5300-2#show rlm group 0
RLM Group 0 Status
 User/Port: RLM_MGR/3000 ISDN/3001
RLM WATCHER:
 RLM Version : 2
 Link State: Up         Last Link Status Reported: Up
 Next tx TID: 1         Last rx TID: 0
 Server Link Group[demask]: Last Reported Priority: LOW
  link [10.48.85.187(FastEthernet0), 10.48.85.24] = socket[standby]
  link [10.48.84.187(Ethernet0), 10.48.84.24] = socket[standby]
 Server Link Group[mgc-bru-3a]: Last Reported Priority: HIGH
  link [10.48.85.187(FastEthernet0), 10.48.85.65] = socket[active]
  link [10.48.84.187(Ethernet0), 10.48.84.65] = socket[standby]
```

Use o comando show rlm group 0 ver Ethernet0 e ver que está agora no link ativo.

```
V5300-2#show rlm group 0
RLM Group 0 Status
 User/Port: RLM_MGR/3000 ISDN/3001
RLM WATCHER:
 RLM Version : 2
 Link State: Up         Last Link Status Reported: Up_Recovered
 Next tx TID: 2         Last rx TID: 0
 Server Link Group[demask]: Last Reported Priority: LOW
  link [10.48.85.187(FastEthernet0), 10.48.85.24] = socket[closed]
  link [10.48.84.187(Ethernet0), 10.48.84.24] = socket[standby]
 Server Link Group[mgc-bru-3a]: Last Reported Priority: HIGH
  link [10.48.85.187(FastEthernet0), 10.48.85.65] = socket[closed]
  link [10.48.84.187(Ethernet0), 10.48.84.65] = socket[active]
```

O comando ios debugar o grupo 0 do rlm fornece os detalhes quando os occurrs do problema.

```
V5300-2#debug rlm group ?
  <0-255>  rlm group number
  event    debug rlm event
  packet   debug rlm packet
  <cr>
```

```
Jul 18 12:21:19.516: rlm 0: [State_Up, rx ACTIVE_LINK_BROKEN]
over link [10.48.85.187(FastEthernet0), 10.48.85.65]
Jul 18 12:21:19.516: rlm 0: link [10.48.84.187(Ethernet0),
10.48.84.65] tx START_REQ(tid=3)
Jul 18 12:21:19.520: rlm 0: link [10.48.84.187(Ethernet0),
10.48.84.65] requests activation
Jul 18 12:21:19.520: rlm 0: link [10.48.85.187(FastEthernet0),
10.48.85.65] is deactivated
Jul 18 12:21:19.524: rlm 0: link [10.48.84.187(Ethernet0),
```

```
10.48.84.65] rx START_ACK(tid=3)
Jul 18 12:21:19.524: rlm 0: [State_Recover, rx START_ACK]
over link [10.48.84.187(Ethernet0), 10.48.84.65]
Jul 18 12:21:19.524: %ISDN-4-RLM_STATUS_CHANGE: ISDN SC
Se0:15 SC: Status Changed to: Link Recovered.
```

Verifique Cisco PGW2200 para ver se há o estado dos alarmes com o **comando rtrv-alms**.

```
PGW2200a mml>rtrv-alms
   MGC-02 - Media Gateway Controller 2004-07-29 06:25:29.451 GMT
M  RTRV
   "iplnk2-v5300-2: 2004-07-29 06:21:26.180 GMT,ALM=\"SC FAIL\",SEV=MJ"
    ;
PGW2200a mml>
```

Informações Relacionadas

- Notas Técnica de Softswitch Cisco PGW 2200
- Documentação técnica dos Controladores de sinalização da Cisco
- Apoio de tecnologia de voz
- Suporte ao Produto de Voz e Comunicações Unificadas
- Pesquisando defeitos o Cisco IP Telephony
- Suporte Técnico e Documentação - Cisco Systems