SAMSUNG

Ubigate iBG series

TroubleShooting Manual

Safety Information is intended to ensure user's safety and prevent the loss of property.
Please read this document carefully for proper usage guidelines.

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TRADEMARKS

This manual should be read before the installation and operation, and the operator should correctly install and operate the product by using this manual.

This manual may be changed for the system improvement, standardization and other technical reasons without prior notice.

For further information on the updated manual or have a question for the content of manual, contact the homepage below.

Homepage: http://www.samsungdocs.com

GENERAL USER INFORMATION

Radio Frequency Interference

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Requirements

Thie equipment complies with Part 68 of the FCC rules and the requirements adopted by the ATCA. On the bottom of this equipment is a label that contains, among other information, a product identifier in the format **US: A3LIS00BiBG2016**. If requested, this number must be provided to the telephone company.

Unauthorized Modifications

Any changes or modifications performed on this equipment that are not expressly approved in writing by SAMSUNG ELECTRONICS, CO., LTD. could cause non-compliance with the FCC rules and void the user's authority to operate the equipment.

Allowing this equipment to be operated in such a manner as to not provide for proper answer supervision is a violation of Part 68 of the FCC's rules.

Telephone Connection Requirement

A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ATCA. A compliant telephone cord and modular plug is provided with this product. It is designed to be connected to a compatible modular jack that is also compliant. See installation instructions for details.

FCC Part 68

This equipment complies with Part 68 of the FCC rules. The FCC Part 68 label is located on the bottom chassis panel. This label contains the FCC Registration Number and Ringer Equivalence Number(REN) for this equipment. If requested, this information must be provided to your telephone company.
Connection to the telephone network should be made by using standard modular telephone jacks, type RJ-11C. The RJ-11C plug and/or jacks used must comply with the FCC Part 68 rules.

CIRCUIT TYPE	MODULE TYPE	FACILITY INTERFACE CODE	NETWORK JACK
LOOP START LINE	FXO-4M	02LS2	RJ11C
	T1E1-2M	04DU9.DN	RJ48C
		04DU9.1KN	
		04DU9.1SN	
		04DU9.1SN(PRI)	
	T1E1-4	04DU9.DN	RJ48C
		04DU9.1KN	
		04DU9.1SN	
		04DU9.1SN(PRI)	
DID LINE	FXS-4M, FXS-24	02RV2.T	RJ11C
	T1E1-2M	04DU9.BN	RJ48C
	T1E1-4	04DU9.BN	RJ48C
E & M TIE LINE	E & M-2M	TL11M	RJ45S
	T1E1-2M	04DU9.BN	RJ48C
	T1E1-4	04DU9-BN	RJ48C

Ringer Equivalence Number

The REN is used to determine the number of devices that may be connected to a telephone line. Excessive RENs on a telephone line may result in the devices not ringing in response to an incoming call. In most but not all areas, the sum of RENs should not exceed five(5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company. For earlier products, the REN is separately shown on the label.

Incidence of Harm

If this equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

Changes to Telephone Company Equipment or Facilities

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

Service Center

If trouble is experienced with the Ubigate iBG system, please contact your local office of SAMSUNG ELECTRONICS, CO., LTD. for repair or warranty information. If the trouble is causing harm to the telephone network, the telephone company may request that you remove the equipment from the network until the problem is resolved.

Field Repairs

Only technicians certified on the Ubigate iBG system, are authorized by SAMSUNG ELECTRONICS, CO., LTD. to perform system repairs. Certified technicians may replace modular parts of a system to repair or diagnose trouble. Defective modular parts can be returned to SAMSUNG ELECTRONICS, CO., LTD. for repair.

General

Connection to party line service is subject to state tariffs. Contact the state public utility commission, public service commission or corporation commission for information.

Equipment with Direct Inward Dialing ('DID')

ALLOWING THIS EQUIPMENT TO BE OPERATED IN SUCH A MANNER AS TO NOT PROVIDE FOR PROPER ANSWER SUPERVISION IS A VIOLATION OF PART 68 OF THE FCC'S RULES

PROPER ANSWER SUPERVISION IS WHEN:

A) This equipment returns answer supervision to the Public Switched Telephone Network(PSTN) when DID calls are:
   - Answered by the called station
   - Answered by the attendant
   - Routed to a recorded announcement that can be administered by the Customer Premises Equipment(CPE) user.
   - Routed to a dial prompt

B) This equipment returns answer supervision on all DID calls forwarded to the PSTN.
   - Permissible exceptions are:
   - A call is unanswered
   - A busy tone is received
   - A reorder tone is received

Equal Access Requirements

This equipment is capable of providing users access to interstate providers of operator services through the use of access codes. Modification of this equipment by call aggregators to block access dialing codes is a violation of the Telephone Operator consumers Act of 1990.

Electrical Safety Advisory

Parties responsible for equipment requiring AC power should consider including an advisory notice in their customer information suggesting the customer use a surge arrestor. Telephone companies report that electrical surges, typically lightning transients, are very destructive to customer terminal equipment connected to AC power sources. This has been identified as a major nationwide problem.

Music on Hold Warning

In accordance with US copyright laws, a license may be required from the American Society of Composers, Authors and Publishers(ASCAP) or other similar organizations if copyright music is transmitted through the Music on Hold feature.
SAMSUNG ELECTRONICS, CO., LTD. hereby disclaims any liability arising out of failure to obtain such a license.

DISA Warning

Lines that are used for the Direct Inward System Access feature must have the disconnect supervision options provided by the telephone company.

As it is impossible to control who may access your DISA line it is suggested that you do not turn this feature on unless you intend to use it. If you do use this feature, it is good practice to frequently change pass codes and periodically review your telephone records for unauthorized use.

Safety Warning

High touch current earth connection essential before making telecommunication network connection.

Energy Hazard - careful treatment is needed.

Every wire for communication should be larger than 26 AWG.

Double pole/neutral fusing.

Underwriters Laboratories

The system has been tested to comply with safety standards in the United States and Canada. This system is listed with Underwriters Laboratories. The cUL Mark is separately shown on the label.

The following statement from Underwriters Labs applies to the Ubigate System:

1. Separation of TNV and SELV - Pluggable A: ‘The separate protective earthing terminal provided on this product shall be permanently connected to earth.’(Instruction)

2. Separation of TNV and SELV - Pluggable B: ‘Disconnect TNV circuit connector(s) before disconnecting power.’(Instruction)

3. Warning to service personnel: ‘CAUTION: Double pole/neutral fusing’

4. Telephone line cord: ‘CAUTION: To reduce the risk of fire, use only No. 26 AWG or larger(e.g., 24 AWG) UL Listed or CSA Certified Telecommunication Line Cord’

5. Leakage currents due to ringing voltage - Earthing installation instructions: ‘1. A supplementary equipment earthing conductor is to be installed between the product or system and earth, that is, in addition to the equipment earthing conductor in the power supply cord. 2. The supplementary equipment earthing conductor may not be smaller in size than the unearthed branch-circuit supply conductors. The equipment earthing conductor is to be connected to the product at the terminal provided, and connected to earth in a manner that ill retain the earth connection when the power supply cord is unplugged. The connection to earth of the supplementary earthing conductor shall be in compliance with the appropriate rules for terminating bonding jumpers in Part K of Article 250 of the National Electrical Code, ANSI/NFPA 70 and Article 10 of Part 1 of the Canadian Electrical Code, Part 1, C22.1. Termination of the supplementary earthing conductor is permitted to be made to building steel, to a metal electrical raceway system, or to any earthed item that is permanently and reliably connected to the electrical service equipment earthed. 3. Bare, covered, or insulated earthing conductors are acceptable.
A covered or insulated conductor must have a continuous outer finish that is either green, or green with one or more yellow stripes.’

6. Safety Instructions - Rack Mount ‘Rack Mount Instructions -
The following or similar rack-mount instructions are included with the installation instructions:

   A) Elevated Operating Ambient - If installed in a closed or multi-unitrack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature(Tma) specified by the manufacturer.

B) Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

C) Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

D) Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

E) Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit(e.g., use of power strips).'

INTRODUCTION

Purpose

Ubigate iBG Trouble Shooting Manual describes the troubleshooting procedures for the faults that can occur on iBG system.

Conventions

The following types of paragraphs contain special information that must be carefully read and thoroughly understood. Such information may or may not be enclosed in a rectangular box, separating it from the main text, but is always preceded by an icon and/or a bold title.

NOTE

Indicates additional information as a reference.

Console Screen Output

- The lined box with '`Courier New`' font will be used to distinguish between the main content and console output screen text.
- '**`Bold Courier New`**' font will indicate the value entered by the operator on the console screen.

Contacting Technical Support

For questions regarding the product and the content of this document Please visit:

http://www.samsungnetwork.com

Obtaining Publications and Additional Information

The Ubigate iBG system documentation set, and additional literature is available at:

http://www.samsungnetwork.com

Revision History

EDITION	DATE OF ISSUE	REMARKS
00	09. 2007.	First draft

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CHAPTER 1. SYSTEM and Management

SNMP Agent is not responding

When an SNMP manager application is trying to receive a response from the SNMP Agent on iBG system, the Agent does not respond.

Symptoms

The SNMP manager application sends a request for any managed object, the agent is not responding and the message shows timeout.

```
net-snmp-5.2/apps>$ snmpget -v2c -c samsung
90.1.1.4 .1.3.6.1.2.1.1.2.0

Timeout: No Response from 90.1.1.4.
```

Possible Causes

- The SNMP manager application is not reachable from the iBG system.
- The SNMP community string does not match.

Troubleshooting

1. Check that the correct UDP port in your SNMP manager application, 161, is used for sending the requests.
2. Check the reachabilty to the iBG system through ping test.
3. When the UDP port and ping test are ok, check the community strings configured in your SNMP manager application.

Users cannot log in using TACACS+

Symptoms

User cannot log in using TACACS+(Terminal Access Controller Access Control System+). Either user cannot get the username prompt or get the prompt but authentication or authorization fails.

Possible Causes

- Required configuration is missing.
- Username and password are not in the /etc/passwd file on the TACACS+ server.
- The TACACS+ daemon(server) is not reachable from the iBG system.

Troubleshooting

1. Use the 'show runing-config' command to make sure your configuration includes the following commands:

```
aaa  enable
aaa  authentication login TACACS tacacs
aaa  authentication protocols ETC ascii/pap
aaa  authorization commands TACACS tacacs
```

If the command is not present, add it to the configuration.

2. In addition, check the configuration of the interface being used. The interface must have the following commands configured:

```
interface ethernet 0/4
       …
       aaa
authentication TACACS ETC
         authorization TACACS
       exit aaa
```

If these configurations are not present, add them to the interface configuration.

3. Make sure your daemon configuration file, for example ‘tac_plus.cfg’, includes the following lines, as appropriate:

```
      key = shared_key
      …
      user = username {
     pap = cleartext password
or
     login = cleartext password
}
```

4. Check to make sure that the appropriate username and password pairs are contained in the /etc/passwd file.
   If the appropriate users are not specified, generate a new user with the correct username and password, using the ‘add user’ command.

5. Check that the correct TCP port, default is 49, is used for sending request to the TACACS+ server.

6. Check the reachability to the iBG system through ping test.

Users cannot log in using RADIUS

Symptoms

User cannot log in using RADIUS(Remote Authentication Dial-In User Service). Either user cannot get the username prompt or get the prompt but authentication fails.

Possible Causes

- Required configuration is missing.
- The RADIUS daemon(server) is not reachable from the iBG system.

Troubleshooting

1. Use the 'show runing-config' command to make sure your configuration includes the following commands:

```
aaa  enable
aaa  authentication login RADIUS radius
aaa  authentication protocols PAP pap
```

If the command is not present, add it to the configuration.

2. In addition, check the configuration of the interface being used. The interface must have the following commands configured:

```
interface ethernet 0/0
       …
       aaa
authentication RADIUS PAP
exit aaa
```

If these configurations are not present, add them to the interface configuration.

3. Make sure your daemon configuration file, for example ‘clients.conf’ and ‘users’, includes the following lines, as appropriate:
Check that the secret value, located in ‘clients.conf”, is the same as the shared_key configured in the iBG system:

```
client xxx.xxx.xxx.xxx /xxx{
    …
  secret = shared_key
}

Check the user name and the password located in ‘users’.
‘username’  User-Password = = ‘ password’
```

4. Check that the correct UDP port, default is 1812 and 1813, is used for sending the request to the RADIUS server.

5. Check the reachability to the iBG system through the ping test.

User is locked out on authentication failure

If the user-lock function is enabled and a user fails three times successively on authentication while trying to access to the iBG system with telnet or ssh, then the user will be locked out. The locked user cannot access the iBG system remotely. Only the console is available for that user without unlocking the account by an administrator.

Symptoms

On the iBG system, the following system log message occurs for the telnet user.

```
*Apr 28,2007,19:45:27 #AAA-notification: User aaa is locked
out on authentication failure from 90.90.90.240.
```

On the iBG system, the following system log message occurs for the ssh user.

```
*Apr 28,2007,19:42:50 #SSH-warning: SSHD: Too many
authentication failures for 'abc'
*Apr 28,2007,19:42:50 #SSH-warning: SSHD: User abc is locked
out on authentication failure.
```

Possible Causes

- User forgot the password.
- An attacker tried to access the system.

Troubleshooting

1. Connect to the console if the locked user is the only administrator in the system. The remote connection with telnet or ssh is also available if you can use another administrator account.

2. Verify that the user is locked out using ‘show user_accounts’ command.

3. Unlock the user using ‘no user-lock username <user-id>‘ command.

DHCP IP address may be in use alarm

This is an alarm created when the IP address for host binding may be in use by another host. When the fault occurs DHCP server cannot allocate this IP address to the configured host.

Symptoms

On the iBG system, the following event occurred.

```
May 28,2007,14:34:08 #DHCP-notification: IP address for host
binding may be in use(cid=[cid])
```

Possible Causes

The IP address for host binding is used by another host.

Troubleshooting

Reconfigure the IP address for host binding in the pool using the ‘host’ command.

DHCP subnet mismatch alarm

Alarm created when the subnet address of host binding does not match with the subnet address of the interface. When this fault occurs the DHCP server cannot allocate this IP address to the configured host.

Symptoms

On the iBG system, the following event occurred.

```
May 28,2007,14:34:08 #DHCP-notification: Subnet mismatch for
host binding(cid=[cid])
```

Possible Causes

The Subnet address of the host binding does not match the subnet address of the interface.

Troubleshooting

1. Check the IP address for host binding in the pool using the ‘show ip dhcp config’ command.

2. Check the subnet mask for host binding in the pool using the ‘show ip dhcp config’ command..

DHCPv6 relay wrong interface alarm

Alarm to notify whether the relay interface is valid or not in case the relay server address is linked to local address.


NOTE

This alarm is applied to SNOS version 2.0.0 or higher.

Symptoms

On the iBG system, the following event has occurred.

```
May 28,2007,14:34:08 #DHCPv6-warning: DHCPv6 Relay: trying
to send on wrong interface([name])
May 28,2007,14:34:08 #DHCPv6-warning: DHCPv6 Relay: Trying
to configure wrong interface ([name])
May 28,2007,14:34:08 #DHCPv6-warning: Not able to get server
itf index for interface name ([name])
```

Possible Causes

- The configuring interface does not exist.
- The configuring interface is not configured to enable IPv6.

Troubleshooting

1. Verify that the configuring interface name is correct.
2. Check that the configuring interface is enabled for IPv6 configuration.

DHCPv6 relay forwarding fail

Alarm to notify that relay message forwarding has failed. When the fault occurs the DHCPv6 client cannot be allocated to IPv6 prefix through this DHCPv6 relay agent.


NOTE

This alarm is applied to SNOS version 2.0.0 or higher.

Symptoms

On the iBG system, the following event has occurred.

```
INFO [DHCP_V6] dhcp6s.c:1604: received SOLICIT from
fe80::200:11ff:fe7c:5637
ERR [DHCP_V6] dhcp6relay.c:1125:
dhcp6r_modify_global_prefix_based_on_ifp failed to overwrite
the linkaddr.
```

Possible Causes

- The configuring interface is not configured to enable IPv6.
- The configuring interface is not configured for IPv6 global address.

Troubleshooting

1. Check that the configuring interface is enabled for IPv6 configuration.
2. Check that the configuring interface is set for IPv6 global address.

DHCPv6 unable to configure domain name

Alarm created when the DHCPv6 server pool is unable to configure the domain name.


NOTE

This alarm is applied to SNOS version 2.0.0 or higher.

Symptoms

DHCPv6 server pool unable to configure domain name.
On the iBG system, the following event has occurred.

```
Unable to configure domain name.
```

Possible Causes

- The configured domain names have reached the maximum domain name limit of 10.
- The configuring domain name contains an invalid character. The allowed characters are alphabets, digits, character '.' and character '-'.

Troubleshooting

1. Check the number of configured domain names.
2. Verify the configuring interface name uses only valid characters.

Time synchronization with SNTP server fails

Synchronization of the system time with remote SNTP server failed due to reachability or service availability issues.


NOTE

This alarm is applied to SNOS version 2.0.0 or higher.

Symptoms

On the iBG system, the following system logging message has occurred.

```
*Apr 28,2007,14:26:47 #SNTP-warning: Timeout interval is
expired. The server '90.90.90.50' couldn't be reached.
*Apr 28,2007,14:26:47 #SNTP-warning: The server
'90.90.90.50' clock is unsynchronized.
```

Possible Causes

- Remote SNTP server is not operational.
- SNTP server address is unreachable from the iBG system.
- SNTP server is unsynchronized to another server or time source.

Troubleshooting

1. Verify that the SNTP server address configured in the SNTP client has been synchronized to another server or reference time source.

2. Verify that the configured SNTP server address is reachable from the iBG system.

3. Modify the SNTP server address or add another valid SNTP server address in the SNTP client configuration.

Getting file list using Windows FTP clients fails

While trying to get the file list from the iBG system using FTP clients on Windows(such as WS_FTP), it fails due to unrecognized file list format.


NOTE

This alarm is applied to SNOS version 2.0.0 or higher.

Symptoms

When an FTP client on Windows connects to iBG system FTP server, it cannot get the file list completely or cannot show the exact file information.

Possible Causes

- Several FTP clients for Windows should have to recognize and parse the file list format for graphical display.
- File list format in iBG FTP server is not well-known.
- FTP clients software can't recognize the iBG system's file list format.

Troubleshooting

1. Verify iBG system FTP server is configured to iBG-private file list format.

```
router/configure# show ftp
FTP Setting:
-------------------------------------
       FTP Server:     Enabled
       (File list format: iBG private)

Allowed FTP Client:
-------------------------------------
       Username:       admin
       Password:       admin
```

2. Modify the FTP server configuration to linux-like file list format using the ‘ftp_server linux’ command.

```
router/configure# ftp_server linux
router/configure# show ftp
FTP Setting:
--------------------------------------
       FTP Server:    Enabled
       (File list format: Linux-like)

Allowed FTP Client:
--------------------------------------
       Username:      admin
       Password:      admin
```

Boot fail fault I (wrong SNOS)

This fault occurs when there is an error in the process of loading the completely wrong SNOS images file.

Symptoms

On the iBG system, the following event has occurred.

```
[BOOT]:
[BOOT]: @
Compact Flash Device: CF0, Filename: /cf0/oldsystem.cfg
 Don't plug out the compact flash while the image is
loading..
Warning: Out of sub-image number (no.of images:77)
btLoad: loadPackage failed!

Error loading package: errno = 0x0.

 Check if the boot configuration is correct or try rebooting
again
[BOOT]:
```

Possible Causes

The iBG system loads the completely wrong image file.

Troubleshooting

1. Check the correct SNOS image in Compact Flash.
2. Modify the correct file name. (CLI: Router/configure# boot_params)

Boot fail fault II (ascii mode file)

This fault occurs when there is an error in the process of booting with the image file with ftp in ascii mode.

Symptoms

On the iBG system, the following event has occurred.

```
[BOOT]:
[BOOT]: @
Compact Flash Device: CF0, Filename:
/cf0/iBGY_Advanced_1.0.5.9.Z
 Don't plug out the compact flash while the image is
loading..
[BOOTM] Loading package...
 Loading [100]
[BOOTM] System image loading done
 Loading [100]
[BOOTM] Bootrom image loading done
loading error 0
btLoad: loadPackage failed!

Error loading package: errno = 0x0.
[BOOT]:
```

Possible Causes

The iBG system loads the image file with ftp in ascii mode.

Troubleshooting

1. Boot another SNOS image in Compact Flash.
2. Download SNOS through the non-ascii mode option.
3. Change boot parameter file name to new downloaded image name.
4. Reboot the system.

Boot fail fault III (non-existing file in cf0)

This fault occurs when there is an error in the process of loading non-existing SNOS images file from cf0.

Symptoms

On the iBG system, the following event has occurred.

```
[BOOT]:
[BOOT]: @
Compact Flash Device: CF0, Filename:
/cf0/iBGY_Advanced_1.1.2.4.Z
 Don't plug out the compact flash while the image is
loading..

Cannot open '/cf0/iBGY_Advanced_1.1.2.4.Z'.

Error loading package: errno = 0x380003.

 Check if the boot configuration is correct or try rebooting
again
[BOOT]:
```

Possible Causes

The iBG system loads non-existing SNOS file from cf0.

Troubleshooting

1. Check the correct SNOS image in Compact Flash.
2. Modify the correct file name.

Boot fail fault IV (wrong model SNOS)

This fault occurs when there is an error in the process of loading the wrong model's SNOS image.

Symptoms

On the iBG system, the following event has occurred.

```
[BOOT]:
[BOOT]: @
Compact Flash Device: CF0, Filename:
/cf0/iBG2016_Advanced_2.0.0.0.Z
 Don't plug out the compact flash while the image is
loading..
[BOOTM] Image  is invalid..model type 2016
btLoad: loadPackage failed!

Error loading package: errno = 0x0.

 Check if the boot configuration is correct or try rebooting
again
[BOOT]:
```

Possible Causes

The iBG system has loaded the wrong model's image file.

Troubleshooting

1. Check the correct SNOS image in Compact Flash.
2. Modify the correct file name or download the exact model SNOS images.

Boot fail fault V (no access right ftp file/non-existing in ftp server)

This fault occurs when there is an error in the process of loading an inaccessible snos image file from the ftp server.

Symptoms

On the iBG system, the following event has occurred.

```
BOOT]:
[BOOT]: @
[BOOTM] Downloading via
FTP(90.90.90.240::ftpboot/mpu81/ori_u2_test.Z)...

Error loading file: errno = 0x0.

 Check if the boot configuration is correct or try rebooting
again
[BOOT]:
```

Possible Causes

The iBG system can’t load SNOS image from the ftp server because the user has no access rights or there is no file in the ftp server.

Troubleshooting

1. Check the correct SNOS image name and directory in the ftp server.

2. If there is a correct SNOS name, check file access rights.

Boot fail fault VI (wrong file size)

This fault occurs when there is an error in the process of loading imcompletely downloaded SNOS images file.

Symptoms

On the iBG system, the following event has occurred.

```
[BOOT]:
[BOOT]: @
Compact Flash Device: CF0, Filename:
/cf0/iBG2016_Advanced_2.0.0.0.Z
 Don't plug out the compact flash while the image is
loading..
loading error 0

[BOOTM] Error: SNOS image must be invalid. Please check SNOS
image size is correct.


Error loading file: errno = 0x0.

 Check if the boot configuration is correct or try rebooting
again
[BOOT]:
```

Possible Causes

The iBG system loads SNOS which has been incompletely downloaded.

Troubleshooting

1. Check the correct SNOS image size and Compact Flash free space size.

```
1.BOOTROM Mode

[BOOT]: L
Contents of /cf0.
  size          date       time       name
--------      ------     ------    --------
       8   AUG-31-2007  18:54:28   Certificates.dat
      28   AUG-31-2007  18:54:28   Keys.dat
   51200   AUG-31-2007  17:15:44   command.log
20124956   AUG-31-2007  17:15:32   iBG3026_Advanced_2.1.1.0.Z
20155863   AUG-30-2007  18:46:48   iBG3026_Advanced_2.1.1.1.Z
    3036   JUL-28-2007  10:11:54   oldsystem.cfg
    2750   AUG-31-2007  18:54:28   system.cfg

Total bytes: 40337841
Bytes Free on /cf0:  87689216

2. CLI Mode
Router# file ls /cf0

WARNING :
Do not remove Compact Flash or reboot during this process

Contents of /cf0:

  size         date       time       name
--------      ------     ------     --------
       8    AUG-31-2007  18:54:28   Certificates.dat
      28    AUG-31-2007  18:54:28   Keys.dat
   51200    AUG-31-2007  17:15:44   command.log
20124956    AUG-31-2007  17:15:32   iBG3026_Advanced_2.1.1.0.Z
20155863    AUG-30-2007  18:46:48   iBG3026_Advanced_2.1.1.1.Z
    3036    JUL-28-2007  10:11:54   oldsystem.cfg
    2750    AUG-31-2007  18:54:28   system.cfg

Total bytes: 40337841
Bytes Free on /cf0:  87689216
Router#
```

2. If there is a enough free space in cf0, download SNOS image again.

3. If there is no space in cf0, remove the unnecessary file and download SNOS image.

Boot fail fault VII (wrong checksum)

This fault occurs when there is an error in the process of loading the broken SNOS image file.

Symptoms

On the iBG system, the following event has occurred.

```
[BOOT]:
[BOOT]: @
Compact Flash Device: CF0, Filename:
/cf0/iBG2016_Advanced_2.0.0.0.Z
 Don't plug out the compact flash while the image is loading..
 [BOOTM] Loading package...
 Loading [100]
[BOOTM] System image loading done
 Loading [100]
[BOOTM] Bootrom image loading done
 Loading [100]
[BOOTM] Voip DSP image loading done
[BOOTM] Checksum validation is checked.[FAIL]
Warning: Check your Package
       Checksum(H:0x23c8d925, C:0xb87c9aba)
       Version (Cur:0x1.0.7.0, Image:0x01.01.02.00)
[BOOTM] Invalid checksum error!!

Error loading file: errno = 0x0.

 Check if the boot configuration is correct or try rebooting
again
[BOOT]:
```

Possible Causes

The iBG system loads the damaged SNOS image file.

Troubleshooting

1. Download a new SNOS image.
2. Reload a new SNOS image.

ISM status cannot be displayed

This fault occurs when the ISM module is not ready.

Symptoms

On the iBG system, we may see the following.

```
Router/configure/ism 1# show ism configuration

======= ISM Current Configuration ======
Status: Wait Service Ready
Heartbeat: Connected to ISM
---------------------------------------
Service: Enable
Bind: ethernet0/3 (192.168.0.85)(ISM status is not Service
Enable)
Mode: fail-open

Router/configure/ism 1# show ism status
No response from ISM manager!!!
```

Possible Causes

The ISM Module is not Service Ready.

Troubleshooting

1. Wait for the ISM Service Ready status for about 1 minute.
2. If you see this symptoms after about 1 minute, try ISM reset.

Logging messages are not displayed

This occurs that there are no logging messages on any available terminal when an user want to see some log messages.

Symptoms

There are no logging messages on any available terminal. But, an user want to see some logging messages to check the status of the system.
Following example box shows the unexpected case.

```
Router# configure terminal
Router/configure# exit
Router#
```

In the example box, An user want to see a logging message relate to enter configuration mode or exit from the mode.

Possible Causes

Logging_on function is disabled by an user once.

Troubleshooting

Enable logging_on function at configuration mode.

After the activation of logging_on function, logging messages will be displayed at proper time.

```
Router# configure terminal
Router/configure# system logging logging_on
logging is enabled
Router/configure# end
Router#  *Sep 03,2007,16:11:22 #PARSER-warning: samsung exit
configuration mode O
N MON SEP 03 16:11:22 2007 FROM SERIAL

Router# configure terminal
Router/configure#  *Sep 03,2007,16:11:28 #PARSER-warning:
samsung entered configu
ration mode ON MON SEP 03 16:11:28 2007 FROM SERIAL
```

```
Router/configure# exit
Router#  *Sep 03,2007,16:11:31 #PARSER-warning: samsung exit
configuration mode O
N MON SEP 03 16:11:31 2007 FROM SERIAL

Router#
```

[iBG-DM]iBG-DM Download Fail

This occurred when iBG-DM download failed.

Symptoms

The user tries to connect iBG system with Web-Browser, and logs in successfully, but iBG-DM downloading has not started.

Possible Causes

iBG-DM files are not stored on the CF card or the image property is wrong.

Troubleshooting

1. Download iBG-DM file from the Web site or Copy from CD-ROM.
2. Check iBG-DM files on the CF card using ‘file and ls’ command.
3. If the file does not exist or file is different from iBG-DM files, try uploading iBG-DM files to CF card.

[iBG-DM] iBG-DM Web Connection Fail

This occurred when Web Connection failed.

Symptoms

When the user tries to connect iBG system with the Web-Browser, it displays ‘Can’t display web page’.

Possible Causes

The Web Server is not enabled in iBG system.

Troubleshooting

1. Check the Web Server Status and enable.
2. Check the Web Server Status using ‘show ip http config’.
3. If the Web Server is not enabled, enable it using the ‘ip http server’ command.

[iBG-DM] iBG-DM does not execute

This occurred when iBG-DM did not execute.

Symptoms

After the iBG-DM download is complete, iBG-DM does not execute.

Possible Causes

Java RunTime(JRE) is not installed on the User PC.

Troubleshooting

1. Connect Java Home page(www.javasoft) and download(We recommand download Java SE JRE 1.5.x version.)

2. Install JRE to User's PC.

[iBG-DM] iBG-DM can’t connect with secure mode

This occurred when iBG-DM secure mode connection failed.

Symptoms

When the user tries to connect to iBG system in secure mode, login fails.

Possible Causes

iBG system Secure mode setting is wrong.

Troubleshooting

1. Check iBG system’s secure mode setting(SNMPv3, SSH) using ‘show running-config’, ‘show ip ssh config’ command.
2. If SNMPv3 is not set properly, set with the ‘snmp-server’ command.
3. If SSH is not enabled, enable with ‘ssh-server’, ‘enable’ command
4. If the hostkey is not generated, generate with ‘ssh_key gen’, ‘generate dsa’ command.

[iBG-DM] iBG-DM can’t login

This occurred when iBG-DM login failed.

Symptoms

When the user tries to login iBG system, login fails. Displays check user account ID and Password.

Possible Causes

iBG system’s user account ID and Password is wrong.

Troubleshooting

Check the iBG system user account ID and password. User can check user account ID with the ‘user_accounts’ command.

[iBG-DM] Config is locked by other user dialog is pop-uped

This occurs when iBG system displays ‘Locked by other user’.

Symptoms

When the user tries to log in to iBG system or some configuration change operation, Config is locked by other user. A dialog pops up.

Possible Causes

Another administrator is logged in in configure mode.

Troubleshooting

Check other Administrator status with the ‘show users’ command. If there is another Administrator in CFG mode, request exit from CFG mode.

[iBG-DM] iBG-DM can’t display dialog message properly

This occurred when the iBG-DM dialog message is displayed.

Symptoms

When iBG-DM dialog message pops up, nothing is displayed in the dialog box.

Possible Causes

Java Virtual Machine compatibility issues.

Troubleshooting

1. Check Java version. If the user is using JRE 6.0, downgrade to 1.5.x
2. Download the latest iBG-DM from the Web-Site or copy from CD-ROM.

[iBG-DM] CLI display result is not matched with iBG-DM screen display

This occurs when CLI display result is not matched with the iBG-DM screen result.

Symptoms

When the user opens the iBG-DM screen, the CLI command result and screen information are compared, but they do not match.

Possible Causes

Another Administrator changed the information.

Troubleshooting

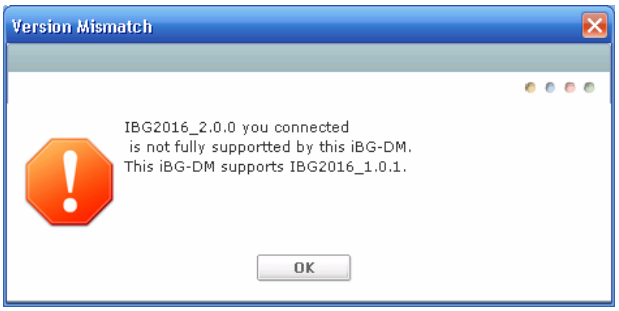
Check other Administrator status with the ‘show users’ command. And press the refresh button.

[iBG-DM] Version Mismatch dialog box is pop-uped

This occurs when the user tries to login with iBG-DM

Symptoms

When the user tries to login, the user account ID and password check passed. After that, the Version Mismatch Dialog popped up.



Possible Causes

The user is using the wrong iBG-DM version. It is not matched with the iBG system SNOS version.

Troubleshooting

Download the new iBG-DM file or copy from CD-ROM. And install to iBG system CF card.

[iBG-DM] Community Setting dialog box pop-uped

This occurs when the user tries to login with iBG-DM.

Symptoms

When the user tries to login, the user account ID and password check passed. After that, the Community Setting dialog popped up.

Possible Causes

iBG-DM has no SNMP community information.

Troubleshooting

If you are an administrator, Just define the SNMP read and write community and type it in the dialog box. iBG-DM help set of the SNMP community.

[iBG-DM] ISM Bind Address is wrong dialog box is pop-uped

This occurs when the user tries to access ISM configuration contents, if ISM is installed.

Symptoms

If ISM is installed and the user try access ISM configuraiton contents, the ISM bind address is wrong Dialog pops up.

Possible Causes

ISM bind address is not the same as the address of the user connected.

Troubleshooting

If iBG system is located in the NAT, just check using the correct address and Press OK. But if the bind information is wrong, Press the Cancel button and change ISM’s binding address.

[iBG-DM] Nothing display in event viewer

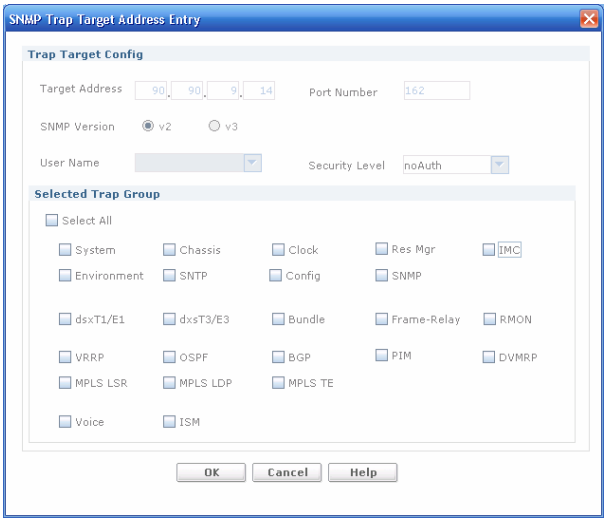
This is occurs when the user wants to check event status.

Symptoms

Nothing is displayed in the event viewer, but some event alarms happen in iBG system.

Possible Causes

User is Off the trap generation.



Troubleshooting

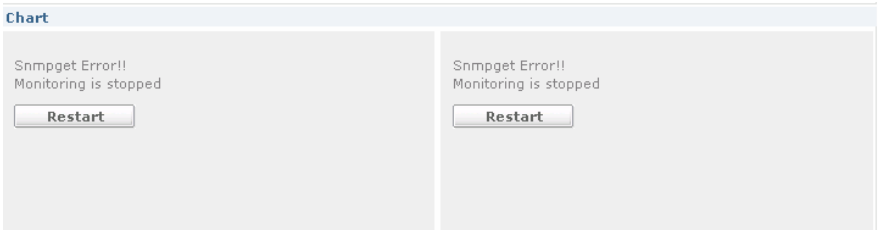
Check the TRAP Target settings with system → SNMP Setup → Trap Control. If the SNMP Trap target is not set, enable the traps using the modify button.

[iBG-DM] SNMP Get Error occurred during performance monitoring

This occurs when the user is using performance monitoring.

Symptoms

While the user is using performance monitoring an SNMP Error occurred. It displayed SNMP get error message instead of chart.



Possible Causes

For some reason, the SNMP operation is not working properly.

Troubleshooting

Check Network status(connections). If everything is OK, press the Restart button. After that Performance checking will be restarted.

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CHAPTER 2. WAN Interface and Protocols

Detection of T1 RAIS alarm

This fault occurs when the AIS alarm(all '1's) at a t1 in CT3 is detected.

Symptoms

On the iBG system, the following event has occurred. Here i_num is a t1 number of CT3.

```
#EVENT-emergency: Channelized T1 Receive alarm indication
Signal [i_num] RAISE
```

Possible Causes

The remote end sets the t1(i_num) of CT3 to 'no enable'.

Troubleshooting

Request 'enable' of the t1(i_num) of CT3 to the remote end.

All T1's RLOF alarm raised

This fault occurs when framing all t1's in CT3 is not the same with one of the remote end.

Symptoms

On the iBG system, the following event has occurred.

```
#EVENT-emergency: Channelized T1 Loss of Frame [1] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [2] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [3] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [4] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [5] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [6] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [7] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [8] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [9] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [10] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [11] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [12] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [13] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [14] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [15] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [16] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [17] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [18] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [19] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [20] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [21] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [22] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [23] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [24] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [25] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [26] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [27] RAISE
#EVENT-emergency: Channelized T1 Loss of Frame [28] RAISE
```

Possible Causes

- The framing of all t1's in CT3 is not the same as the one in the remote end.
- The carrier type of T3 in the remote end is Clear Channel T3.

Troubleshooting

1. Match the framing of all t1's.

2. Check the carrier type of T3 in the remote end.

ppp negotiation failed

This occurred when PPP negotiation failed in LCP Phase.

Symptoms

If you run the ‘show interface bundle <bundle name>’ command on the iBG system, the following event will occur.

```
link        speed   bw    inverted  status     diffdelay(msec)
----        -----   --    --------  ------     ---------------
t1 0/1/0     64     1536  no          down       -
                                 ppp negotiation failed
```

Possible Causes

- Peer’s MRU is larger than the maximum MRU of iBG system or smaller than the minimum MRU of iBG system.
- The peer’s link is down.

Troubleshooting

1. Check the peer’s MRU size using the ‘debug ppp negotiation’ command. If the peer’s MRU size is out of range of the MTU size, change the MTU size using the ‘configure/interface/ppp mtu-mru –magic’ command.

2. Check the peer’s system Link State.

ipcp not in open state

This occurred when PPP negotiation failed in NCP Phase.

Symptoms

If you run the ‘show interface bundle <bundle name>’ command on iBG system, the following event will occur.

```
bundle wan0
-----------
status                          Down

Ipv4 status                     Down, ipcp not in open state
Ipv6 status
number of links                 1
total bandwidth                 1536 kbps
```

Possible Causes

- IP address is not assigned interface on peer’s system.
- The Same IP address as peer’s system is assigned.

Troubleshooting

Check the IP Address of your system and the peer’s system. Change the IP address of your system or peer’s system.

PPP Authentication fail

This occurred when PPP Authentication failed.

Symptoms

If PPP Authentication failed, the PPP interface is down.

Possible Causes

- The configured authentication protocol is different from peer. For example, iBG system is configured PAP, but the peer is configured CHAP.
- iBG system and peer is configured at the same position. For example, the peer is configured as the server and iBG system is configured as the server. iBG system must be configured only at one position - server or client.
- It is configured to the wrong user-name or password.
- The configuration of server - RADIUS or TACAS+is wrong.

Troubleshooting

1. Check the Authentication configuration. If it is configured differently than the authentication protocol, change the configuration.

2. If the peer is configured as client, iBG system must be configured as server. You can configure using the ‘ppp authentication pap/chap’ command.

3. heck the user-name and password using the ‘show running-config’ or ‘show interface bundle <bundle name>’ command.

CHAPTER 3. Switching and Routing Protocols

Fail to make Ethernet interface

The error message is shown when the Ethernet interface is created.


NOTE

This alarm is applied to SNOS version 2.0.0 or higher.

Symptoms

On the iBG system, the following event has occurred.

```
ttySI6/configure# int ethernet 3/0
Error specifying ethernet interface number
ttySI6/configure#
```

Possible Causes

- There is a card or other network card that is not an Ethernet network cards in the selected physical slot.
- The selected Ethernet network card failed to initialize.

Troubleshooting

1. Verify the Ethernet network card in the selected physical slot.

2. Verify that the Ethernet network card initialized using the ‘show chassis’ command.

Fail to configure mirror

The error message is shown when the mirror for Ethernet interface is configured.


NOTE

This alarm is applied to SNOS version 2.0.0 or higher.

Symptoms

On the iBG system, the following event has occurred.

```
ttySI6/configure/interface/ethernet (2/0)# mirror interface
ethernet3/0 direction both
Error: Invalid interface name (ethernet3/0)

ttySI6/configure/interface/ethernet (2/0)# mirror interface
ethernet2/0 direction both
Couldn't add port mirror
 *Jul 11,2000,13:18:31 #NSM-error: To and From interface is
the same

ttySI6/configure/interface/ethernet (2/2)# mirror interface
ethernet2/0 direction both
ethernet2/0 already mirrored in Tx and Rx directions
 *Jul 11,2000,13:19:17 #NSM-error: Port already mirrored
```

Possible Causes

- It is not a mirrored port in iBG system.
- Analyzer port is equal to mirrored port.
- there is already an analyzer port in the iBG system.

Troubleshooting

1. Verify there is a mirrored port in iBG system.

2. Compare the anlayzer port and mirrored port. It is should not be the same.

3. Verify that the anlayzer port is already configured using the ‘show mirror’ command.

Error message for poe

An error message is shown when the PoE(Power over Ethernet) command is executed.


NOTE

This alarm is applied to SNOS version 2.0.0 or higher.

Symptoms

On the iBG system, the following event has occurred.

```
0x1f998f40 (poeTask): sysI2Cget: Access to bus=1 add=0x68
off=0 has been retried 3 times!!!

ttySI6/configure# show poe swversion 2
Command failed: error Power Supply not PoE compliant

ttySI6/configure# show poe hwversion 1
Command failed: error Poe Card not present in slot

ttySI6# show poe swversion 2
Command failed: PoE is not initialized.
```

Possible Causes

- There is no power supply equipment for PoE in the iBG system.
- There is no Ethernet network card that supports PoE in the iBG system or selected physical slot.
- There is no PoE module in the Ethernet network card that supports PoE.

Troubleshooting

1. Check that there is power supply equipment for PoE in selected physical slot.

2. Check that there is an Ethernet network card in the selected physical slot.

3. Check that the selected Ethernet network card is initialized using the ‘show chassis’ command.

4. Reboot the iBG system after re-inserting the Ethernet network card for error message ‘sysI2Cget: Access to bus=1 add=0x68 off=0 has been retried 3 times!!!’

Wrong link Status of Ethernet interface

An Ethernet interface link status is not linked-up when the Ethernet interface is configured and it is connected via LAN cable.


NOTE

This alarm is applied to SNOS version 2.0.0 or higher.

Symptoms

On the iBG system, A Link LED of the selected physical port is turned off.

Possible Causes

- It is already down (admin. shutdown) for the selected Ethernet interface.
- It is using the wrong LAN cable.
- There are problems that cause faults in the connected system and network.

Troubleshooting

1. Verify a link status of the selected Ethernet interface using ‘show interface Ethernet <slot>/<port>‘ or ‘show ip interface brief’ command.

2. Execute the ‘no shutdown’ command for the selected Ethernet interface if a link status is admin. down.

3. Verify a link status of other Ethernet interface in same network card. If you think problem for A Selected network card, you can re-insert Ethernet network card and reboot system.

4. Check lan cable, connected system and network.

Error message during configuring switchport on Ethernet interface

It is shown error message when it configures Ethernet interface to vlan


NOTE

This alarm is applied to SNOS version 2.0.0 or higher.

Symptoms

On the iBG-seires system, it cannot configure to switchport for selected ethernet interface.

```
ttySI6/configure/interface/ethernet (2/0)# switchport
Error: Bridge not configured
```

Possible Causes

‘Bridge’ is not configured in iBG system.

Troubleshooting

On iBG system, it must configure ‘Bridge’. You can use ‘bridge 1 protocol mstp’ command.

GRE (IPIP) tunnel interface down

GRE/IPIP tunnel interface is a logical interface so the up/down condition is different from other interfaces.

Symptoms

Tunnel interface is down.

Possible Causes

- The IP address is not assigned to the tunnel interface.
- The Interface is down where the address is assigned as the tunnel source.
- The Tunnel destination address is not routable.
- GRE tunnel interface is keepalive down.
- Route looping occur.

Troubleshooting

1. Check tunnel interface configuration.
   Check that the IP address is assigned to the tunnel interface.
   Check that the tunnel source interface is up.
   Check that the tunnel destination is routable.

2. If the tunnel is keepalive down.
   Check the tunnel peer's state.
   Check keepalive interval and retry count. Default value is 10 sec for interval and 3 times for retry. The default value is recommended.

3. Route looping occurs
   Check that the tunnel destination is routed to tunnel.
   It may occur when the routing protocol is running on the tunnel and physical interface. The tunnel destination should be routed to a physical interface, but is routed to the tunnel itself. In this condition, the tunnel interface will be up/down flapping or down.

No BGP Adjacency (iBGP)

Symptoms

BGP neighbor is not established.

Possible Causes

- Interface is shutdown.
- Neighbor configuration is wrong.
- Connectivity with the neighbor has failed.

Troubleshooting

1. Use the show ip interface brief command to make sure that the interface has not been administratively shutdown. Remove this configuration setting with the ‘no shutdown’ command, if shutdown is configured.

2. Make sure that the BGP configuration is correct. To establish BGP, configure a TCP session with another router using the ‘neighbor remote-as’ command.
   - Make sure the two routers know how to reach each other’s loopback addresses, if you have established iBGP using loopback interfaces. Typically, you have an IGP(say OSPF) running between the two routers. In this case, enable OSPF on the loopback interface or redistribute the loopback address into OSPF.
   - Ping to each other’s loopback address to ensure mutual reachability.

3. Make sure you can reach the neighbor using the ‘ping A.B.C.D’ command.

No BGP Adjacency (eBGP)

Symptoms

BGP neighbor adjacency is not established.

Possible Causes

- Interface is shutdown.
- Neighbor configuration is wrong.
- Connectivity with the neighbor has failed.

Troubleshooting

1. Use the ‘show ip interface brief’ command to make sure that the interface has not been administratively shutdown. Remove this configuration setting with the no shutdown command, if shutdown is configured.

2. Make sure that the BGP configuration is correct. To establish BGP, configure a TCP session with another router using the neighbor remote-as command.
   - Make sure you have configured the multihop number for an eBGP neighbor that is not directly connected.
   - Use the neighbor ebgp-multihop.

3. Make sure you can reach the neighbor using the ‘ping A.B.C.D’ command.

No BGP4+ Adjacency (iBGP)


NOTE

This alarm is applied to SNOS version 2.0.0 or higher.

Symptoms

BGP4+ neighbor adjacency is not established.

Possible Causes

- Interface is shutdown.
- Neighbor configuration is wrong.
- Connectivity has failed.

Troubleshooting

1. Use the show ipv6 interface brief command to make sure that the interface has not been administratively shutdown. Remove this configuration setting with the no shutdown command, if shutdown is configured.

2. Make sure that the BGP4+ configuration is correct. To establish BGP4+, configure a TCP session with another router using the neighbor remote-as command.
   - Make sure the two routers know how to reach each other's loopback addresses, if you have established iBGP using loopback interface. Typically, you have an IGP(say OSPF) running between the two routers. In this case, enable OSPF on the loopback interface or redistribute the loopback address into OSPF.
   - Ping to each other's loopback address to ensure mutual reachability.

3. Make sure you can reach the neighbor using the ping6 X:X::X:X command.

No BGP4+ Adjacency (eBGP)


NOTE

This alarm is applied to SNOS version 2.0.0 or higher.

Symptoms

BGP4+ neighbor is not established.

Possible Causes

- Interface is shutdown.
- Neighbor configuration is wrong.
- Connectivity has failed.

Troubleshooting

1. Use the show ipv6 interface brief command to make sure that the interface has not been administratively shutdown. Remove this configuration setting with the no shutdown command, if shutdown is configured.

2. Make sure that the BGP4+ configuration is correct. To establish BGP4+, configure a TCP session with another router using the neighbor remote-as command.
   - Make sure you have configured the multihop number for an eBGP neighbor that is not directly connected.
   - Use the neighbor ebgp-multihop.

3. Make sure you can reach the neighbor using the ping6 X:X::X:X command.

No PIM-SM Adjacency

Symptoms

PIM-SM neighbor adjacency is not established.

Possible Causes

- Interface is shutdown.
- PIM is disabled on the Interface.
- Adjacency with CISCO.

Troubleshooting

1. Make sure that PIM-SM is enabled on the interface by using the ‘show ip pim sparse-mode interface’ command.

2. If you are trying to establish adjacency with CISCO and are not successful, use the ‘ip pim exclude-genid’ command on the interface. Some old CISCO IOS do not recognize the GenID option in the PIM-SM Hello packet and discard the packet.

No PIM-SM BSR and RP information

Symptoms

PIM-SM BSR and RP information is not displayed.

Possible Causes

Unicast routing configuration is wrong.

Troubleshooting

Check your unicast routing configuration to make sure that you can reach BSR and RP. Use the ‘show ip route’ command to display the unicast routing table.

RIP doesn't receive packets from adjacency

RIP router doesn't receive packets from adjacent router. The RIP routes in the table will be removed after the timeout expires.

Symptoms

The RIP routes which are retained in the RIP database and updated periodically will not be updated and then removed after the timeout expires.

Possible Causes

- The interface is administratively shutdown.
- The RIP router is disabled on the interface.
- The version of RIP routers does not match.
- The configuration of RIPv2 authentication is incorrect.

Troubleshooting

1. Use the 'show ip interface brief' command to make sure that the interface is not administratively shutdown. Remove this configuration using the 'no shutdown' command, if 'shutdown' is configured.

2. Confirm that RIP is enabled on the interface. To enable RIP on a particular interface, use the 'network' command. Use the 'show ip rip interface' to make sure that RIP is enabled for the interface.

Sample Output

```
Router# show ip rip interface
ethernet0/2 is up, line protocol is up
  Routing Protocol: RIP
    Receive RIP packets
    Send RIP packets
    Passive interface: Disabled
    Split horizon: Enabled with Poisoned Reversed
    Authentication disabled
    IP interface address:
      192.100.1.1/24
```

3. Make sure that RIP advertisements are being sent and received on the interface. You can use either a packet sniffer(such as, Ethereal or TCP dump) or RIP debug messages to verify the RIP advertisements.

To turn on RIP debug, type:

```
Router# debug rip events
Router# debug rip packet detail
```

To display the debug messages on the console, type:

```
Router# debug console
```

4. Use one router configured as RIPv1 and the other router as RIPv2 results in no RIP adjacency. Configure the router running RIPv2 as follows:

```
Router# show running-config interface ethernet0/2
interface ethernet0/2
 ip address 192.100.1.1/24
 ip rip send version 1-compatible
 ip rip receive version 1 2
Router#
```

5. Make sure that the interface is configured as RIPv2 authentication. RIP router can't receive updates from adjacent router if the configuration of RIPv2 authentication is does not match.

RIP doesn’t send packets to adjacency

RIP router doesn’t send packets to adjacent router.

Symptoms

RIP adjacency can’t receive RIP update. The RIP routes which are retained in the RIP database and updated periodically will not be updated and then removed once the timeout expires.

Possible Causes

- The interface is administratively shutdown.
- The RIP router is disabled on the interface.
- The interface is configured as passive.

Troubleshooting

1. Use the ‘show ip interface brief’ command to make sure that the interface is not administratively shutdown. Remove this configuration using the ‘no shutdown’ command, if ‘shutdown’ is configured.

2. Confirm that RIP is enabled on the interface. To enable RIP on a particular interface, use the ‘network’ command. Use the ‘show ip rip interface’ to make sure that RIP is enabled for the interface.

Sample Output

```
Router# show ip rip interface
ethernet0/2 is up, line protocol is up
  Routing Protocol: RIP
    Receive RIP packets
    Send RIP packets
    Passive interface: Disabled
    Split horizon: Enabled with Poisoned Reversed
    Authentication disabled
    IP interface address:
      192.100.1.1/24
```

3. Make sure that the interface is not configured as a passive interface using the ‘show running-config router rip’ command:

```
Router# show running-config router rip
router rip
 network 33.1.1.0/24
 passive-interface ethernet0/2
Router#
```

If the interface is configured as passive(as shown above), remove this configuration setting by using the ‘no’ command.

```
Router/configure/router/rip# no passive-interface ethernet0/2
```

IGMP has no group membership.

The system has no IGMP connected group membership.

Symptoms

The system has no IGMP connected group membership. Multicast packets are not forwarded.

Possible Causes

- The interface is administratively shutdown.
- There is no multicast routing configuration on the interface.

Troubleshooting

1. Use the ‘show ip interface brief’ command to make sure that the interface is not administratively shutdown. Remove this configuration using the ‘no shutdown’ command, if ‘shutdown’ is configured.

2. Make sure that the multicast routing protocol(DVMRP or PIM) is enabled on the interface. To enable the multicast routing protocol on a particular interface, use the ‘ip dvmrp enable’ or ‘ip pim sparse-mode’ command. Use the ‘show ip igmp interface’ to confirm that IGMP is active for the interface.

Sample Output

```
Router# show ip igmp interface

Interface ethernet0/2(Index 3)
 IGMP Enabled, Active, Querier, Default version 2
 Internet address is 192.100.1.1
 IGMP query interval is 125 seconds
 IGMP querier timeout is 255 seconds
 IGMP max query response time is 10 seconds
 Last member query response interval is 1000 milliseconds
 Group Membership interval is 260 seconds
```

```
 Number of groups IGMP joined on this interface: 0
 Number of received IGMP V1-reports: 0
 Number of received IGMP V2-reports: 0
 Number of received IGMP V2-leaves: 0
 Multicast routing is enabled on interface
Router#
```

3. Make sure that IGMP reports are received on the interface. You can use IGMP debug messages to verify the system's receiving IGMP reports.

To turn on IGMP debug, type:

```
Router# debug igmp decode
```

To display the debug messages on the console, type:

```
Router# debug console
```

RIPng has no adjacency

RIPng router has no adjacency.


NOTE

This alarm is applied to SNOS version 2.0.0 or higher.

Symptoms

The RIPng router can't receive or send RIPng updates. The RIPng routes which are retained in the RIPng database and updated periodically will not be updated and then removed after the timeout expires.

Possible Causes

- The interface is administratively shutdown.
- The RIP router is disabled on the interface.
- The interface is configured as passive.

Troubleshooting

1. Use 'show ipv6 interface brief' command to make sure that the interface is not administratively shutdown. Remove this configuration using the 'no shutdown' command, if shutdown is configured.

2. Make sure that RIPng is enabled on the interface. To enable RIPng on a particular interface, use the 'ipv6 router rip' command. Use the 'show ipv6 rip interface' to confirm that RIPng is enabled for the interface.

Sample Output

```
Router# show ipv6 rip interface
ethernet3/3 is up, line protocol is up
  Routing Protocol: RIPng
    Passive interface: Disabled
    Split horizon: Enabled with Poisoned Reversed
```

```
    IPv6 interface address:
      2007:5:28::1/48
      fe80::216:32ff:fe80:1189/10
Router#
```

3. Make sure that the interface is not configured as a passive interface using the 'show running-config router ipv6 rip' command:

```
Router# show running-config router ipv6 rip
router ipv6 rip
 passive-interface ethernet0/2
Router#
```

If the interface is configured as passive(as shown above), remove this configuration setting by using *no* command.

Router/configure/router/ipv6/rip# no passive-interface Ethernet0/2

4. Make sure that RIPng advertisements are being sent and received on the interface. You can use either a packet sniffer(such as, Ethereal or TCP dump) or RIP debug messages to verify the RIPng advertisements.

To turn on RIPng debug, type:

```
Router# debug ipv6 rip events
Router# debug ipv6 rip packet detail
```

To display the debug messages on the console, type:

```
Router# debug console
```

No OSPFv2 Adjacency

This fault occurs when OSPFv2 cannot change to Full neighbor state with neighbor OSPF router.

Symptoms

On the iBG system, the following event has occurred.

```
iBG# show ip ospf neighbor

OSPF process 1:
Neighbor ID   Pri   State   Dead Time  Address   Interface
iBG#
```

Possible Causes

- OSPF interface status is down state.
- Misconfiguration for OSPF router.
- Misconfiguration for OSPF interface.
- Mismatched for interface MTU.

Troubleshooting

1. Check interface status for enabled OSPF.
Use the ‘show ip interface brief’ command to make sure that the interface has not been administratively shutdown. Remove this configuration setting with the ‘no
shutdown’ command, if shutdown is configured.

```
iBG# show ip interfaces brief
Interface     Type             IP-Address/Mask    Status
ethernet0/2   ETHERNET(802.3)  10.1.1.1/24        Admin. down
ethernet3/3   ETHERNET(802.3)  30.30.30.1/24      Up
lo1           S/W LOOPBACK     1.1.1.1/32         Up
```

```
iBG# configure terminal
iBG/configure# interface ethernet 0/2
iBG/configure/interface/ethernet(0/2)# no shutdown
iBG/configure/interface/ethernet(0/2)# end
```

2. Check OSPF network area.

Make sure that OSPF has been enabled on the interface. To enable OSPF on a particular interface, use the 'network area' command with a specified Area ID. Use the 'show ip ospf interface' to confirm that OSPF is enabled for the interface.

```
iBG-A# show ip ospf interface
ethernet0/2 is up, line protocol is up
  Internet Address 10.1.1.1/24, Area 0.0.0.0, MTU 1500
  Process ID 1, Router ID 1.1.1.1, Network Type BROADCAST,
Cost: 1
  Transmit Delay is 1 sec, State DR, Priority 1, TE Metric 0
  Designated Router(ID) 1.1.1.1, Interface Address 10.1.1.1
  No backup designated router on this network
  Timer intervals configured, Hello 10, Dead 40, Wait 40,
Retransmit 5
    Hello due in 00:00:10
  Neighbor Count is 0, Adjacent neighbor count is 0
  Authentication disabled
  Crypt Sequence Number is 1180597705
  Hello received 0 sent 331, DD received 0 sent 0
  LS-Req received 0 sent 0, LS-Upd received 0 sent 0
  LS-Ack received 0 sent 0, Discarded 0

iBG-B# show ip ospf interface
ethernet0/2 is up, line protocol is up
  Internet Address 10.1.1.2/24, Area 0.0.0.1, MTU 1500
  Process ID 1, Router ID 2.2.2.2, Network Type BROADCAST,
Cost: 1
  Transmit Delay is 1 sec, State DR, Priority 1, TE Metric 0
  Designated Router(ID) 2.2.2.2, Interface Address 10.1.1.2
  No backup designated router on this network
  Timer intervals configured, Hello 10, Dead 40, Wait 40,
Retransmit 5
    Hello due in 00:00:08
  Neighbor Count is 0, Adjacent neighbor count is 0
  Authentication disabled
```

```
  Crypt Sequence Number is 1180597457
  Hello received 27 sent 384, DD received 9 sent 6
  LS-Req received 2 sent 2, LS-Upd received 6 sent 8
  LS-Ack received 6 sent 6, Discarded 0

iBG-A# configure terminal
iBG-A/configure# router ospf 1
iBG-A/configure/router/ospf# no network 10.1.1.1/24 area 0
iBG-A/configure/router/ospf# network 10.1.1.1/24 area 1
iBG-A/configure/router/ospf# end
iBG-A#
```

3. Check OSPF Hello parameter.

Check on the interface to make sure that OSPF Hello packets are being sent and received on the interface. You can use either a packet sniffer(such as, Ethereal or TCP dump) or system log messages to verify the hello packet. To turn on system logging, type:

If HelloInterval or RtrDeadInterval is mismatched, OSPF cannot make adjacency. Change this configuration setting with the 'ip ospf hello-interval' or 'ip ospf dead-interval' command in interface mode, if OSPF Hello parameter is mismatched.

```
iBG-A# debug ospf packet hello detail
iBG-A# debug console
iBG-A# 2007/05/31 17:57:58 OSPF: SEND[Hello]: To 224.0.0.5
via ethernet0/2:4
2007/05/31 17:57:58 OSPF: ---------------------------------
------------------
2007/05/31 17:57:58 OSPF: Header
2007/05/31 17:57:58 OSPF: Version 2
2007/05/31 17:57:58 OSPF: Type 1(Hello)
2007/05/31 17:57:58 OSPF: Packet Len 44
2007/05/31 17:57:58 OSPF: Router ID 1.1.1.1
2007/05/31 17:57:58 OSPF: Area ID 0.0.0.1
2007/05/31 17:57:58 OSPF: Checksum 0xefb2
2007/05/31 17:57:58 OSPF: AuType 0
2007/05/31 17:57:58 OSPF: Hello
2007/05/31 17:57:58 OSPF: NetworkMask 255.255.255.0
```

```
2007/05/31 17:57:58 OSPF:   HelloInterval 5
2007/05/31 17:57:58 OSPF:   Options 0x2(*|-|-|-|-|-|E|-)
2007/05/31 17:57:58 OSPF:   RtrPriority 1
2007/05/31 17:57:58 OSPF:   RtrDeadInterval 20
2007/05/31 17:57:58 OSPF:   DRouter 10.1.1.1
2007/05/31 17:57:58 OSPF:   BDRouter 0.0.0.0
2007/05/31 17:57:58 OSPF:   # Neighbors 0
2007/05/31 17:57:58 OSPF: ----------------------------------
------------------
2007/05/31 17:57:58 OSPF: RECV[Hello]: From 2.2.2.2 via
ethernet0/2:10.1.1.1(1)
2007/05/31 17:57:58 OSPF: ----------------------------------
------------------
2007/05/31 17:57:58 OSPF:   Header
2007/05/31 17:57:58 OSPF:   Version 2
2007/05/31 17:57:58 OSPF:   Type 1(Hello)
2007/05/31 17:57:58 OSPF:   Packet Len 44
2007/05/31 17:57:58 OSPF:   Router ID 2.2.2.2
2007/05/31 17:57:58 OSPF:   Area ID 0.0.0.1
2007/05/31 17:57:58 OSPF:   Checksum 0xed96
2007/05/31 17:57:58 OSPF:   AuType 0
2007/05/31 17:57:58 OSPF:   Hello
2007/05/31 17:57:58 OSPF:   NetworkMask 255.255.255.0
2007/05/31 17:57:58 OSPF:   HelloInterval 10
2007/05/31 17:57:58 OSPF:   Options 0x2(*|-|-|-|-|-|E|-)
2007/05/31 17:57:58 OSPF:   RtrPriority 1
2007/05/31 17:57:58 OSPF:   RtrDeadInterval 40
2007/05/31 17:57:58 OSPF:   DRouter 10.1.1.2
2007/05/31 17:57:58 OSPF:   BDRouter 0.0.0.0
2007/05/31 17:57:59 OSPF:   # Neighbors 0
2007/05/31 17:57:59 OSPF: ----------------------------------
------------------
 *May 31,2007,17:57:59 #OSPF-warning: RECV[Hello]:
 From 2.2.2.2 via ethernet0/2h:

iBG-A# configure terminal
iBG-A/configure#interface ethernet 0/2
iBG-A/configure/interface/ethernet(0/2)# ip ospf hello-
interval 10
iBG-A/configure/interface/ethernet(0/2)# end
```

4. Check MTU size of OSPF interface.
Run 'show ip ospf neighbor', if you see the neighbor but the state is not full.
Make sure that both routers have the same MTU size for the interfaces.

```
iBG-A# show ip ospf neighbor
OSPF process 1:
Neighbor ID  Pri  State       Dead Time  Address   Interface
2.2.2.2       1   ExStart/DR  00:00:35   10.1.1.2
ethernet0/2

iBG-A# show ip ospf interface
ethernet0/2 is up, line protocol is up
  Internet Address 10.1.1.1/24, Area 0.0.0.1, MTU 1000
  Process ID 1, Router ID 1.1.1.1, Network Type BROADCAST,
  Cost: 1
  Transmit Delay is 1 sec, State Backup, Priority 1, TE
  Metric 0
  Designated Router(ID) 2.2.2.2, Interface Address 10.1.1.2
  Backup Designated Router(ID) 1.1.1.1, Interface Address
  10.1.1.1
  Timer intervals configured, Hello 10, Dead 40, Wait 40,
  Retransmit 5
    Hello due in 00:00:05
  Neighbor Count is 1, Adjacent neighbor count is 0
  Authentication disabled
  Crypt Sequence Number is 1180602332
  Hello received 60 sent 135, DD received 6 sent 19
  LS-Req received 1 sent 2, LS-Upd received 6 sent 6
  LS-Ack received 6 sent 5, Discarded 46
iBG-A#

iBG-B# show ip ospf interface
ethernet0/2 is up, line protocol is up
  Internet Address 10.1.1.2/24, Area 0.0.0.1, MTU 1500
  Process ID 1, Router ID 2.2.2.2, Network Type BROADCAST,
  Cost: 1
  Transmit Delay is 1 sec, State DR, Priority 1, TE Metric 0
  Designated Router(ID) 2.2.2.2, Interface Address 10.1.1.2
  Backup Designated Router(ID) 1.1.1.1, Interface Address
  10.1.1.1
  Timer intervals configured, Hello 10, Dead 40, Wait 40,
  Retransmit 5
    Hello due in 00:00:07
  Neighbor Count is 1, Adjacent neighbor count is 0
```

```
  Authentication disabled
  Crypt Sequence Number is 1180597457
  Hello received 90 sent 514, DD received 29 sent 23
  LS-Req received 4 sent 3, LS-Upd received 12 sent 14
  LS-Ack received 11 sent 12, Discarded 73
iBG-B#

iBG-A# configure terminal
iBG-A/configure#interface ethernet 0/2
iBG-A/configure/interface/ethernet(0/2)# mtu 1500
iBG-A/configure/interface/ethernet(0/2)# end
iBG-A#
```

5. Check the OSPF passive interface.
Make sure that interface is not configured as a passive interface using the 'show running-config router ospf" command.

```
iBG-A# show running-config router ospf
router ospf 1
 passive-interface ethernet0/2
 network 10.1.1.0/24 area 1
iBG-A#

If the interface is configured as passive(as shown above),
remove this configuration setting by using the 'no passive
interface' command:

iBG-A# configure terminal
iBG-A/configure#router ospf 1
iBG-A/configure/router/ospf# no passive-interface
ethernet0/2
iBG-A/configure/router/ospf# end
iBG-A#
```

No OSPFv3 Adjacency

This fault occurs when OSPFv3 cannot change to Full neighbor state with the neighbor OSPFv3 router.


NOTE

This is applied to SNOS version 2.0.0 or higher.

Symptoms

On the iBG system, the following event has occurred.

```
iBG-A# show ipv6 ospf neighbor
OSPFv3 Process (1)
Neighbor ID   Pri   State   Dead Time   Interface  Instance ID
```

Possible Causes

- OSPFv3 interface status is down state.
- Misconfiguration for OSPFv3 router.
- Misconfiguration for OSPFv3 interface.

Troubleshooting

1. Check the interface status for enabled OSPF.
Use the ‘show ipv6 interface brief’ command to make sure that the interface has not been administratively shutdown. Remove this configuration setting with the ‘no shutdown’ command, if shutdown is configured.

```
iBG-A# show ipv6 interfaces brief
Interface         Type              Status        IPv6-Address
ethernet0/2       ETHERNET(802.3)  Admin.        Down
300a::0a0a:0a01/64 [TEN] from CLI
fe80::0216:32ff:fe80:2cc3/10 [TEN] from Stack

iBG-A# configure terminal
iBG-A/configure# interface ethernet 0/2
iBG-A/configure/interface/ethernet(0/2)# no shutdown
iBG-A/configure/interface/ethernet(0/2)# end
```

2. Check OSPFv3 area-id.
Make sure that OSPFv3 is enabled on the interface. To enable OSPF on a particular interface, use the 'ipv6 router ospf area' command with a specified Area ID. Use the 'show ipv6 ospf interface' to confirm that OSPF is enabled for the interface.

```
iBG-A# show ip ospf interface
ethernet0/2 is up, line protocol is up
  Internet Address 10.1.1.1/24, Area 0.0.0.0, MTU 1500
  Process ID 1, Router ID 1.1.1.1, Network Type BROADCAST,
  Cost: 1
  Transmit Delay is 1 sec, State DR, Priority 1, TE Metric 0
  Designated Router(ID) 1.1.1.1, Interface Address 10.1.1.1
  No backup designated router on this network
  Timer intervals configured, Hello 10, Dead 40, Wait 40,
  Retransmit 5
    Hello due in 00:00:10
  Neighbor Count is 0, Adjacent neighbor count is 0
  Authentication disabled
  Crypt Sequence Number is 1180597705
  Hello received 0 sent 331, DD received 0 sent 0
  LS-Req received 0 sent 0, LS-Upd received 0 sent 0
  LS-Ack received 0 sent 0, Discarded 0

iBG-A# show ipv6 ospf interface
ethernet0/2 is up, line protocol is up
  Interface ID 3
  IPv6 Prefixes
    fe80::216:32ff:fe80:2cc3/10(Link-Local Address)
    300a::a0a:a01/64
  OSPFv3 Process(1), Area 0.0.0.1, Instance ID 0
    Router ID 1.1.1.1, Network Type BROADCAST, Cost: 1
    Transmit Delay is 1 sec, State Waiting, Priority 10
    No designated router on this link
    No backup designated router on this link
    Timer interval configured, Hello 10, Dead 40, Wait 40,
    Retransmit 5
      Hello due in 00:00:03
    Neighbor Count is 0, Adjacent neighbor count is 0
iBG-B# show ipv6 ospf interface
ethernet0/2 is up, line protocol is up
  Interface ID 3
  IPv6 Prefixes
    fe80::216:32ff:fe80:4783/10(Link-Local Address)
```

```
  OSPFv3 Process(1), Area 0.0.0.0, Instance ID 0
    Router ID 2.2.2.2, Network Type BROADCAST, Cost: 1
    Transmit Delay is 1 sec, State DR, Priority 1
    Designated Router(ID) 2.2.2.2
      Interface Address fe80::216:32ff:fe80:4783
    No backup designated router on this link
    Timer interval configured, Hello 10, Dead 40, Wait 40,
    Retransmit 5
      Hello due in 00:00:03
    Neighbor Count is 0, Adjacent neighbor count is 0
    iBG-B#

iBG-A# configure terminal
iBG-A/configure# interface ethernet 0/2
iBG-A/configure/interface/ethernet(0/2)# no ipv6 router ospf
area 1 tag 1
iBG-A/configure/interface/ethernet(0/2)# ipv6 router ospf
area 0 tag 1
iBG-A/configure/interface/ethernet(0/2)# end
iBG-A#
```

3. Check OSPFv3 Hello parameter.
Check on the interface to make sure that OSPFv3 Hello packets are being sent and received on the interface. You can use either packet sniffer(such as, Ethereal or TCP dump) or system log messages to verify the hello packet. To turn on system logging, type:

If HelloInterval or RtrDeadInterval is mismatched, OSPFv3 cannot make adjacency. Change this configuration setting with the 'ipv6 ospf hello-interval' or 'ipv6 ospf dead-interval' command in interface mode, if OSPFv3 Hello parameter is mismatched.

```
iBG-A# debug ipv6 ospf packet hello detail
iBG-A# debug console
iBG-A# 2007/05/31 18:43:09 OSPFv3: SEND[Hello]:
src(fe80::216:32ff:fe80:2cc2
2007/05/31 18:43:09 OSPFv3: OSPFv3 Header
2007/05/31 18:43:09 OSPFv3:   Version 3
2007/05/31 18:43:09 OSPFv3:   Type 1(Hello)
2007/05/31 18:43:09 OSPFv3:   Packet length 40
2007/05/31 18:43:09 OSPFv3:   Router ID 1.1.1.1
2007/05/31 18:43:09 OSPFv3:   Area ID 0.0.0.0
```

```
2007/05/31 18:43:09 OSPFv3:   Checksum 0x0000
2007/05/31 18:43:09 OSPFv3:   Instance ID 0
2007/05/31 18:43:09 OSPFv3: OSPFv3 Hello
2007/05/31 18:43:09 OSPFv3:   Interface ID 3
2007/05/31 18:43:09 OSPFv3:   RtrPriority 10
2007/05/31 18:43:09 OSPFv3:   Options 0x000013(-|R|-|-|E|V6)
2007/05/31 18:43:09 OSPFv3:   HelloInterval 10
2007/05/31 18:43:09 OSPFv3:   RtrDeadInterval 30
2007/05/31 18:43:09 OSPFv3:   DRouter 2.2.2.2
2007/05/31 18:43:09 OSPFv3:   BDRouter 1.1.1.1
2007/05/31 18:43:09 OSPFv3:   # Neighbors 1
2007/05/31 18:43:09 OSPFv3:     Neighbor 2.2.2.2
2007/05/31 18:43:11 OSPFv3: RECV[Hello]:
src(fe80::216:32ff:fe80:4783) -> dst(f2
2007/05/31 18:43:11 OSPFv3: OSPFv3 Header
2007/05/31 18:43:11 OSPFv3:   Version 3
2007/05/31 18:43:11 OSPFv3:   Type 1(Hello)
2007/05/31 18:43:11 OSPFv3:   Packet length 40
2007/05/31 18:43:11 OSPFv3:   Router ID 2.2.2.2
2007/05/31 18:43:11 OSPFv3:   Area ID 0.0.0.0
2007/05/31 18:43:11 OSPFv3:   Checksum 0x765f
2007/05/31 18:43:11 OSPFv3:   Instance ID 0
2007/05/31 18:43:11 OSPFv3: OSPFv3 Hello
2007/05/31 18:43:11 OSPFv3:   Interface ID 3
2007/05/31 18:43:11 OSPFv3:   RtrPriority 1
2007/05/31 18:43:11 OSPFv3:   Options 0x000013(-|R|-|-|E|V6)
2007/05/31 18:43:11 OSPFv3:   HelloInterval 10
2007/05/31 18:43:11 OSPFv3:   RtrDeadInterval 40
2007/05/31 18:43:11 OSPFv3:   DRouter 2.2.2.2
2007/05/31 18:43:11 OSPFv3:   BDRouter 1.1.1.1
2007/05/31 18:43:11 OSPFv3:   # Neighbors 1
2007/05/31 18:43:11 OSPFv3:     Neighbor 1.1.1.1
 *May 31,2007,18:43:11 #OSPFv3-warning: RECV[Hello]:
Neighbor(2.2.2.2) RouterDeh

iBG-A# configure terminal
iBG-A/configure# interface ethernet 0/2
iBG-A/configure/interface/ethernet(0/2)# ipv6 ospf dead-
interval 40
iBG-A/configure/interface/ethernet(0/2)# end
```

4. Check the OSPFv3 passive interface.
Make sure that the interface is not configured as a passive interface using the 'show running-config router ipv6 ospf' command.

```
iBG-A# show running-config router ipv6 ospf
router ipv6 ospf 1
 abr-type cisco
 passive-interface ethernet0/2
iBG-A#
```

If the interface is configured as passive(as shown above), remove this configuration setting by using the 'no passive interface' command:

```
iBG-A# configure terminal
iBG-A/configure#router ipv6 ospf 1
iBG-A/configure/router/ipv6/ospf# no passive-interface
ethernet0/2
iBG-A/configure/router/ipv6/ospf# end
iBG-A#
```

No DVMRP Adjacency

This fault occurs when DVMRP cannot make neighbor state with neighbor DVMRP router.

Symptoms

On the iBG system, the following event has occurred.

```
iBG-A# show ip dvmrp neighbor
iBG-A#
```

Possible Causes

DVMRP interface status is in down state.

Troubleshooting

1. Check the interface status for enabled DVMRP.
   Use the 'show ip interface brief' and 'show ip dvmrp interface' command to make sure that the interface is not administratively shutdown. Remove this configuration setting with the 'no shutdown' command, if shutdown is configured.

```
iBG-A# show ip interfaces br
Interface      Type             IP-Address/Mask   Status
ethernet0/2    ETHERNET(802.3)  10.1.1.1/24       Admin. down
lo1            S/W LOOPBACK     1.1.1.1/32        Up

iBG-A# show ip dvmrp interface
Address        Interface    Vif   Ver.   Nbr  Type    Remote
                            Index        Cnt          Address
10.1.1.1       ethernet0/2  -     v3.ff  0    BCAST   N/A

DVMRP interface does not make Virtual interface.

iBG-A# configure terminal
iBG-A/configure# interface ethernet 0/2
iBG-A/configure/interface/ethernet(0/2)# no shutdown
iBG-A/configure/interface/ethernet(0/2)# end
```

Incorrect VRRP Status

This fault occurs when VRRP does not work for Master or Backup state.

Symptoms

On the iBG system, the following event has occurred.
Continuously VRRP state is INIT.

```
iBG-A# show vrrp
   VRRP Group Number:  10
       Description:
       State:   INIT Priority: 130  Preempt:  on
Advertisement:    2 secs
       Authentication Type: No Authentication
       Virtual IP Addresses:
          IP Address 1: 10.1.1.10
       Virtual MAC Address: 00:00:5e:00:01:0a
       VRRP Configured Interface: ethernet0/2
```

Possible Causes

VRRP interface status is in down state.

Troubleshooting

1. Check interface status for enabled VRRP.
   Make sure the interfaces are up and running by using the 'show ip interface brief' command.

```
iBG-A# show ip interfaces br
Interface     Type              IP-Address/Mask    Status
ethernet0/2   ETHERNET(802.3)   10.1.1.1/24        Admin. down
ethernet3/3   ETHERNET(802.3)   30.30.30.1/24      Up
lo1           S/W LOOPBACK      1.1.1.1/32         Up
WAN           PT2PT             20.20.20.1/24      Up
```

2. Use 'no shutdown' command, in the interface mode, to bring up the interface.

```
iBG-A# configure terminal
iBG-A/configure# interface ethernet 0/2
iBG-A/configure/interface/ethernet(0/2)# no shutdown
iBG-A/configure/interface/ethernet(0/2)# end
iBG-A#
```

CHAPTER 4. Security

Packet dropping by map misconfigurations

Unexpected packet dropping event could occur when the firewall map is misconfigured by a user.

Symptoms

The following error event occurs, dropping packets.

```
*Jan 01,2000,05:30:19 #FIREWALL-alert: 50.1.1.10 ->
10.1.1.2 icmp Unable to determine route to destination
 *Jan 01,2000,05:30:24 #FIREWALL-alert: 50.1.1.10 ->
10.1.1.2 icmp Unable to determine route to destination
 *Jan 01,2000,05:30:29 #FIREWALL-alert: 50.1.1.10 ->
10.1.1.2 icmp Unable to determine route to destination
```

Possible Causes

- This case can occur when a network interface is improperly registered in the firewall map interface.
- At least one network interface should be attached to the firewall Internet map as any other network interface is registered in either Corp or DMZ.

Troubleshooting

1. Check the firewall map configuration using show ip interface brief and show firewall interface all.

```
Ubigate# show ip interfaces brief
Interface          Type              IP-Address/Mask   Status
ethernet0/2         ETHERNET (802.3)  50.1.1.1/24       Up
ethernet0/4         ETHERNET (802.3)  10.1.1.1/24       Up
Ubigate# show firewall interface all

Interface     Map Name
---------     --------
ethernet0/2    corp
Ubigate#
```

2. Configure the interface that is not registered with any other firewall interface map.

```
Ubigate# configure terminal
Ubigate/configure# firewall internet
Ubigate/configure/firewall internet# interface ethernet0/4
Ubigate/configure/firewall internet# end
Ubigate# show firewall interface all

Interface     Map Name
---------     --------
ethernet0/2    corp
ethernet0/4    internet
Ubigate#
```

There must be at least one Corp and one Internet map, repectively registered with at least one network interface each when you enable the firewall in Ubigate.

Packet dropping by misconfigured firewall policies

Unexpected packet dropping event could occur when the firewall policy is misconfigured by a user.

Symptoms

The following error event will occur and packets will be dropped.

```
#FIREWALL-critical: 50.1.1.10 -> 10.1.1.2 icmp ICMP Type: 8
 Code: 0   Deny access policy(corp:100) matched, dropping
 packet
 *Jan 01,2000,05:45:58 #FIREWALL-critical: 50.1.1.10 ->
 10.1.1.2 icmp ICMP Type: 8 Code: 0   Deny access
 policy(corp:100) matched,
 dropping packet
 *Jan 01,2000,05:45:59 #FIREWALL-critical: 50.1.1.10 ->
 10.1.1.2 icmp ICMP Type: 8 Code: 0   Deny access
 policy(corp:100) matched,
 dropping packet
 *Jan 01,2000,05:46:00 #FIREWALL-critical: 50.1.1.10 ->
 10.1.1.2 icmp ICMP Type: 8 Code: 0   Deny access
 policy(corp:100) matched,
 dropping packet
```

Possible Causes

- Unexpected traffic flows can occur. For example, contravention packet denies or permit events could happen due to the mistakenly configured firewall policy set.
- The benign packet could be dropped by the Rate Limit policy such as max-connection limit, bandwidth and policing.
- The benign packet could be dropped by the application of a contents filter such as ftp-filter, smtp-filter and http-filter

Troubleshooting

1. Check the firewall policy configuration using the show firewall policy <map> and show firewall interface all.

```
Ubigate/configure/firewall corp# show firewall policy corp
Advanced: S - Self Traffic, N - Nat-Ip/Nat-Pool, L - Logging
          R - Rpc-Filter, F - Ftp-Filter, H - Http-Filter,
          M - Smtp-Filter
          E - Policy Enabled, T - Schedule, I - Rate Limit

Pri  Dir Source Addr    Destination Addr   Proto Sport Dport
Action Advanced
---  --- -----------    ----------------   ----------------- -
----- --------
100  out any            any       any   any   any   DENY    EL
1022 out any            any       any   any   any   PERMIT SEL
1023 in  any            any       any   any   any   PERMIT SEL
1024 out any            any       any   any   any   PERMIT EL
```

2. In order to override the misconfigured deny policy, set a permit policy with a higher priority.(or you can just delete the misconfigured policy, in a simplistic approach.)

```
Ubigate/configure/firewall corp# policy 10 in permit
Ubigate/configure/firewall corp/policy 10 in# show firewall
policy corp
Advanced: S - Self Traffic, N - Nat-Ip/Nat-Pool, L - Logging
          R - Rpc-Filter, F - Ftp-Filter, H - Http-Filter,
          M - Smtp-Filter
          E - Policy Enabled, T - Schedule, I - Rate Limit

Pri  Dir Source Addr    Destination Addr   Proto Sport Dport
Action Advanced
---  --- -----------    ----------------   -----------------
------ --------
10   in  any            any       any   any   any   PERMIT EL
100  out any            any       any   any   any   DENY    EL
1022 out any    any     any       any   any   any   PERMIT SEL
1023 in  any    any     any       any   any   any   PERMIT SEL
1024 out any    any     any       any   any   any   PERMIT EL
```

3. Check the rate-limit of the firewall policy using the 'show firewall policy <map> detail'.

```
Ubigate/configure # show firewall policy corp priority 50 detail

Policy with Priority 50 is enabled, Direction is outbound
Action permit, Traffic is transit
Logging is enable
Source Address is any, Dest Address is any
Source Port is any, Dest Port is any, any
Schedule is disabled, Ftp-Filter is disabled
Smtp-Filter is disabled, Http-Filter is disabled
Rpc-Filter is disabled, Nat is disabled
Max-Connections 50, Active-Connections 0
Connection-Rate is disabled
Policing 100 pkts per second, Bandwidth is disabled
Bytes In 0, Bytes Out 0
Ubigate/configure/firewall corp/policy 50 out#
```

4. Check the application contents filter using show firewall object ftp-filter|http-filter|smtp-filter|rpc-filter <map> and show firewall policy <map> detail.

```
 Ubigate/configure # show firewall policy corp detail
priority 30

Policy with Priority 30 is enabled, Direction is outbound
Action permit, Traffic is transit
Logging is enable
Source Address is any, Dest Address is any
Source Port is any, Dest Port is any, any
Schedule is disabled, Ftp-Filter Object is ftp_deny1
Smtp-Filter is disabled, Http-Filter is disabled
Rpc-Filter is disabled, Nat is disabled
Max-Connections 8192, Active-Connections 0
Connection-Rate is disabled
Policing is disabled, Bandwidth is disabled
Bytes In 0, Bytes Out 0
Ubigate/configure # show firewall object ftp-filter corp
Object Name     Action Log Commands
-----------     ------ --- --------
ftp_deny1       deny   no  put get ls mkdir
Ubigate/configure/firewall corp#
```

Firewall log generation configuration

The frequency of log message generation can be regulated by the log configuration.

Symptoms

Too many log messages can intefere with entering user input via the console or terminals. The forwarding performance of the firewall is decreased by too many log messages.

```
*Jan 01,2000,07:07:56 #FIREWALL-informational: 50.1.1.10 ->
10.1.1.1 icmp Service access request successful
 *Jan 01,2000,07:07:56 #FIREWALL-informational: 50.1.1.10 ->
10.1.1.1 icmp ICMP Type: 8 Code: 0 Sequence number: 3328
received
 *Jan 01,2000,07:07:56 #FIREWALL-informational: 10.1.1.1 ->
50.1.1.10 icmp ICMP Type: 0 Code: 0 Sequence number: 3328
received
 *Jan 01,2000,07:07:56 #FIREWALL-informational: 10.1.1.1 ->
50.1.1.10 icmp ICMP Type: 0 Code: 0 Sequence number: 3328
received
 *Jan 01,2000,07:07:57 #FIREWALL-informational: 50.1.1.10 ->
10.1.1.1 icmp ICMP Type: 8 Code: 0 Sequence number: 3584
received
 *Jan 01,2000,07:07:57 #FIREWALL-informational: 50.1.1.10 ->
10.1.1.1 icmp ICMP Type: 8 Code: 0 Sequence number: 3584
received
 *Jan 01,2000,07:07:57 #FIREWALL-informational: 10.1.1.1 ->
50.1.1.10 icmp ICMP Type: 0 Code: 0 Sequence number: 3584
received
 *Jan 01,2000,07:07:57 #FIREWALL-informational: 10.1.1.1 ->
50.1.1.10 icmp ICMP Type: 0 Code: 0 Sequence number: 3584
received
 *Jan 01,2000,07:08:19 #FIREWALL-informational: 50.1.1.10 ->
10.1.1.1 icmp Service access request successful
 *Jan 01,2000,07:08:19 #FIREWALL-informational: 50.1.1.10 ->
10.1.1.1 icmp ICMP Type: 8 Code: 0 Sequence number: 256
received
 *Jan 01,2000,07:08:19 #FIREWALL-informational: 50.1.1.10 ->
10.1.1.1 icmp Service access request successful
 *Jan 01,2000,07:08:19 #FIREWALL-informational: 50.1.1.10 ->
```

```
10.1.1.1 icmp ICMP Type: 8 Code: 0 Sequence number: 256
received
 *Jan 01,2000,07:08:19 #FIREWALL-informational: 10.1.1.1 ->
50.1.1.10 icmp ICMP Type: 0 Code: 0 Sequence number: 256
received
 *Jan 01,2000,07:08:19 #FIREWALL-informational: 10.1.1.1 ->
50.1.1.10 icmp ICMP Type: 0 Code: 0 Sequence number: 256
received
 *Jan 01,2000,07:08:19 #FIREWALL-informational:
50.1.1.10:137 -> 10.1.1.1:137 udp Service access request
successful
 *Jan 01,2000,07:08:19 #FIREWALL-informational:
50.1.1.10:137 -> 10.1.1.1:137 udp Service access request
successful
 *Jan 01,2000,07:08:19 #FIREWALL-alert: 10.254.176.232:137 -
> 10.1.1.1:137 udp Unable to find route for source
 *Jan 01,2000,07:08:21 #FIREWALL-alert: 10.254.176.232:137 -
> 10.1.1.1:137 udp Unable to find route for source
 *Jan 01,2000,07:08:22 #FIREWALL-alert: 10.254.176.232:137 -
> 10.1.1.1:137 udp Unable to find route for source
 *Jan 01,2000,07:08:25 #FIREWALL-informational: 50.1.1.10 ->
10.1.1.2 icmp Connection timed out. Bytes transferred: 32
clear firewall connections all
Ubigate/configure/firewall internet/policy 1 in#
Ubigate/configure/firewall internet/policy 1 in#  *Jan
01,2000,07:08:45 #FIREWALL-informational: 50.1.1.10:137 ->
10.1.1.1:137 udp
 Connection timed out. Bytes transferred: 150
 *Jan 01,2000,07:08:45 #FIREWALL-alert: 50.1.1.10 ->
10.1.1.1 icmp Zero bytes transferred for connection
 *Jan 01,2000,07:08:45 #FIREWALL-informational: 50.1.1.10 ->
10.1.1.1 icmp Connection timed out. Bytes transferred: 128
 *Jan 01,2000,07:08:45 #FIREWALL-informational:
50.1.1.10:137 -> 10.1.1.1:137 udp Connection timed out.
Bytes transferred: 424
 *Jan 01,2000,07:08:45 #FIREWALL-informational: 50.1.1.10 ->
10.1.1.1 icmp Connection timed out. Bytes transferred: 0
 *Jan 01,2000,07:08:45 #FIREWALL-informational: 50.1.1.10 ->
10.1.1.1 icmp Connection timed out. Bytes transferred: 160
 *Jan 01,2000,07:09:04 #FIREWALL-informational: 50.1.1.10 ->
50.1.1.1 icmp Service access request successful
 *Jan 01,2000,07:09:04 #FIREWALL-informational: 50.1.1.10 ->
50.1.1.1 icmp ICMP Type: 8 Code: 0 Sequence number: 256
received
```

```
 *Jan 01,2000,07:09:04 #FIREWALL-informational: 50.1.1.1 ->
50.1.1.10 icmp ICMP Type: 0 Code: 0 Sequence number: 256
received
 *Jan 01,2000,07:09:11 #FIREWALL-informational:
50.1.1.10:137 -> 50.1.1.1:137 udp Service access request
successful
 *Jan 01,2000,07:09:11 #FIREWALL-alert: 10.254.176.232:137 -
> 50.1.1.1:137 udp Unable to find route for source
 *Jan 01,2000,07:09:12 #FIREWALL-alert: 10.254.176.232:137 -
> 50.1.1.1:137 udp Unable to find route for source
 *Jan 01,2000,07:09:14 #FIREWALL-alert: 10.254.176.232:137 -
> 50.1.1.1:137 udp Unable to find route for source
 *Jan 01,2000,07:10:00 #FIREWALL-informational: 50.1.1.10 ->
50.1.1.1 icmp Connection timed out. Bytes transferred: 0
 *Jan 01,2000,07:10:10 #FIREWALL-informational:
50.1.1.10:137 -> 50.1.1.1:137 udp Connection timed out.
Bytes transferred: 408

Ubigate/configure/firewall internet/policy 1 in#
```

Viceversa, no log or too small number of log generation is insufficient for a system audit.

Possible Causes

The loggging configuration is improperly configured.

Troubleshooting

1. Check the logging configuration of the firewall ‘using show firewall logging’.

```
Ubigate# show firewall logging

Logging Aggregation: disable

Aggregation Interval: 3 sec

Logging info    Number of events
------------    ----------------
attack log       1
policy log       1
vpn log          1

Message Category      Message Level
--------------------- -------------
syn-flooding          alert
ip-reassembly         alert
general-attacks       alert
ip-spoofing           alert
unauthorised-access   alert
win-nuke              alert
ip-options            alert
deny-policy           alert
data-inspection       warning
content-filtering     warning
unavailable-policy    warning
allow-policy          informational
system-messages       notification
access-statistics     informational
vpn-messages          informational
Ubigate#
```

2. To reduce the number of log messages from the firewall, enable 'log-aggregation' and set message level to 'none' using 'message-level'.

```
bigate/configure#
Ubigate/configure# firewall global
Ubigate/configure/firewall global# logging

Ubigate/configure/firewall global/logging# log-aggregation
enable
Ubigate/configure/firewall global/logging# message-level
deny-policy none
Ubigate/configure/firewall global/logging# message-level
unauthorised-access  none
Ubigate/configure/firewall global/logging#
```

3. To generate all log messages, disable 'log-aggregation' and configure 'policy', 'attack' and 'vpn' with 1.

```
Ubigate/configure/firewall global/logging#
Ubigate/configure/firewall global/logging# log-aggregation
disable
Ubigate/configure/firewall global/logging# attacks 1
Ubigate/configure/firewall global/logging# policy 1
Ubigate/configure/firewall global/logging# vpn 1

Ubigate/configure/firewall global/logging# message-level
deny-policy info
Ubigate/configure/firewall global/logging# message-level
syn-flooding crit
Ubigate/configure/firewall global/logging#
```

Idle Connection is closed by Firewall Timeout

This occurs when the idle connection is closed by firewall timeout.

Symptoms

An idle connection through which no data has passed is closed.

The telnet connection can be closed by a firewall timeout if a user doesn't send any telnet datagram during the timeout period for the tcp connection.

While a user is downloading a big size file, FTP protocol uses control connection and data connection. The control connection can be closed by firewall because during ftp-inactivity timeout the ftp command packet does not pass throught the ftp control connection.

Possible Causes

The timeout of protocol or service is set with an insufficient timeout value.

Troubleshooting

1. Check the timeout value of the protocol or service using 'show firewall timeout'.

```
Ubigate# show firewall timeout
General Service    Timeout
---------------    -------
tcp                 7200
udp                   60
icmp                  60
tcp-reset             20
ftp-inactivity       300
dns-inactivity       120

Service        Protocol Port  Timeout
-------        -------  ----  -------
Ubigate#
```

2. Change the value of the timeout to be big enough so that it will not be disconnected by the timeout value.

```
Ubigate/configure/firewall global/timeout# general tcp 7200
Ubigate/configure/firewall global/timeout# general ftp-
inactivity 1800
Ubigate/configure/firewall global/timeout# show firewall
timeout
General Service    Timeout
---------------    -------
tcp                  7200
udp                    60
icmp                   60
tcp-reset              20
ftp-inactivity       1800
dns-inactivity        120

Service        Protocol Port  Timeout
-------        -------  ----  -------
Ubigate/configure/firewall global/timeout#
```

Traffic between the same map

It appears that traffics between the same map name(e.g., corp ↔ corp) will be blocked as it does not correspond to any transit policy.

Symptoms

The following error event occurred, dropping packets.

```
Ubigate#  *Jan 01,2000,10:58:08 #PARSER-warning: samsung
exit configuration mode ON SAT JAN 01 10:58:08 2000 FROM
SERIAL
show ip interfaces b
Interface         Type               IP-Address/Mask    Status
ethernet0/1       ETHERNET (802.3)   40.1.1.1/24        Up
ethernet0/2       ETHERNET (802.3)   50.1.1.1/24        Up
ethernet0/4       ETHERNET (802.3)   10.1.1.1/24        Up
Ubigate# show firewall interface all

Interface     Map Name
---------     --------
ethernet0/1    internet
ethernet0/2    corp
ethernet0/4    corp
Ubigate#  *Jan 01,2000,10:58:20 #FIREWALL-informational:
50.1.1.10 -> 10.1.1.2 icmp ICMP Type: 8 Code: 0 Sequence
number: 4608 rec
eived
 *Jan 01,2000,10:58:20 #FIREWALL-critical: 50.1.1.10 ->
10.1.1.2 icmp ICMP Type: 8 Code: 0   Access Policy not found,
dropping pac
ket
 *Jan 01,2000,10:58:25 #FIREWALL-informational: 50.1.1.10 ->
10.1.1.2 icmp ICMP Type: 8 Code: 0 Sequence number: 4864
received
 *Jan 01,2000,10:58:25 #FIREWALL-critical: 50.1.1.10 ->
10.1.1.2 icmp ICMP Type: 8 Code: 0   Access Policy not found,
dropping pac
ket
```

Possible Causes

- Firewall transit policy may not have been configured in the firewall policy.
- Although traffic passes through the same map, between different interfaces, it must be enabled with a firewall transit policy.

Troubleshooting

1. Check the firewall map configuration using 'show firewall policy <map>'.

```
Ubigate#  *Jan 01,2000,10:58:08 #PARSER-warning: samsung
exit configuration mode ON SAT JAN 01 10:58:08 2000 FROM
SERIAL
show ip interfaces b
Interface          Type              IP-Address/Mask    Status
ethernet0/1       ETHERNET (802.3)    40.1.1.1/24       Up
ethernet0/2       ETHERNET (802.3)    50.1.1.1/24       Up
ethernet0/4       ETHERNET (802.3)    10.1.1.1/24       Up
Ubigate# show firewall interface all

Interface     Map Name
---------     --------
ethernet0/1    internet
ethernet0/2    corp
ethernet0/4    corp
```

2. Configure transit policies in the corp map to allow traffic between the specific IP addresses.

```
Ubigate/configure/firewall corp# show ip interfaces b
Interface         Type              IP-Address/Mask    Status
ethernet0/1      ETHERNET (802.3)    40.1.1.1/24       Up
ethernet0/2      ETHERNET (802.3)    50.1.1.1/24       Up
ethernet0/4      ETHERNET (802.3)    10.1.1.1/24       Up
Ubigate/configure/firewall corp# policy 10 in address
10.1.1.0 24 50.1.1.0 24
Ubigate/configure/firewall corp/policy 10 in# exit
Ubigate/configure/firewall corp# policy 11 in address
50.1.1.0 24 10.1.1.0 24
```

```
Ubigate/configure/firewall corp/policy 11 in# end
Ubigate#  show firewall policy corp
Advanced: S - Self Traffic, N - Nat-Ip/Nat-Pool, L - Logging
          R - Rpc-Filter, F - Ftp-Filter, H - Http-Filter,
          M - Smtp-Filter
          E - Policy Enabled, T - Schedule, I - Rate Limit

Pri  Dir Source Addr       Destination Addr   Proto Sport
Dport Action Advanced
---  --- -----------       ----------------   ---------------
-- ------ --------
10   in  10.1.1.0/24  50.1.1.0/24   any  any  any  PERMIT EL
11   in  50.1.1.0/24  10.1.1.0/24   any  any  any  PERMIT EL
1022 out any          any           any  any  any  PERMIT SEL
1023 in  any          any           any  any  any  PERMIT SEL
1024 out any          any           any  any  any  PERMIT EL
Ubigate#  *Jan 01,2000,11:18:48 #FIREWALL-informational:
50.1.1.10 -> 10.1.1.2 icmp Service access request successful
 *Jan 01,2000,11:18:48 #FIREWALL-informational: 50.1.1.10 ->
10.1.1.2 icmp ICMP Type: 8 Code: 0 Sequence number: 5120
received
ket
```

VPN SAs creation fail

This occurs when user tries to establish the VPN connection.

Symptoms

If IPSec VPN is configured and the user tries to create the VPN session using a VPN stream, VPN SAs are not created.

Possible Causes

Interfaces related to the VPN tunnel are not attached to the VPN configuration.

Troubleshooting

Check the interfaces attached to the VPN configuration using the ‘show crypto interfaces’ command.
You can configure using the ‘crypto trusted/untrusted’ command in the interface mode.

CA Certification import fail

This occurs when the user tries to import the certification of the CA to authenticate using the Digital signature.

Symptoms

If CA information is configured and the user tries to import the CA certification, the CA certification import error message is shown.

```
DUT2/configure/crypto# ca authenticate ms2003
Enter the base 64 encoded  CA Certificate
-----BEGIN CERTIFICATE-----
MIIDXDCCAkSgAwIBAgIQdpOoJoG/VpRFjb+3S/E26TANBgkqhkiG9w0BAQUF
ADAQ
MQ4wDAYDVQQDEwVjYXNydjAeFw0wNzA2MTIwMTU2MzVaFw0xMjA2MTIwMjA1
Mzla
MBAxDjAMBgNVBAMTBWNhc3J2MIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIB
CgKC
AQEAxqOCUhq57iYDrP6AN0z4CZOv1kQQVIPYO/AE3ujJthIqgeQpBhxki+1a
8WES
+pr/LVK7MmgvuUxACLggedVbUl0g9Y69eMuQ3k3Vx60K4qQJQKdaUkwCHcqj
M+eo
et5kmTlhB41e4a15sLv92KXuOZv38oDwpX5BtikikaiIp6Yk97hVkv13aJmQ
gpVR
+7H3e6E3xglgchgIx12L8xyL2YdDRJAJxy1CWqY8RWVEYUU062xMRx6GVi0c
u5SX
-----END CERTIFICATE-----

CA Certificate is expired or not yet valid
```

Possible Causes

The CA certification import time and the Router's system time are not identical.

Troubleshooting

Check the router's system date and time using 'show time' and 'show date'. You can configure the invalid date and time using 'time and date' commands in the configuration mode.

IPSec client cannot establish an IKE SA with NO_PROPOSAL_CHOSEN error

While trying to connect iBG system with an IPSec client on Windows(such as SafeNet SoftRemote), it fails to establish an IPSec tunnel due to an IKE configuration problem.

Symptoms

The 'NO_PROPOSAL_CHOSEN' error such as the following has occurred in the log of the IPSec clients.

```
6-13: 15:24:58.704 My Connections\DUT-1 - Initiating IKE
Phase 1 (IP ADDR=20.1.1.1)
 6-13: 15:24:58.704 My Connections\DUT-1 - SENDING>>>>
ISAKMP OAK MM (SA, VID 2x)
 6-13: 15:24:58.704 My Connections\DUT-1 - RECEIVED<<<
ISAKMP OAK INFO (NOTIFY:NO_PROPOSAL_CHOSEN)
 6-13: 15:24:58.704 My Connections\DUT-1 - Discarding IKE SA
negotiation
```

Possible Causes

- Missing IKE policy configuration
- Mismatch of IKE policy parameters

Troubleshooting

1. Use the 'show crypto dynamic ike policy all' command to make sure that the policy for your IPSec client is configured.

2. Check the configuration of the IKE policy parameters such as encryption algorithm, hash algorithm, Diffie-Hellman group, etc. Every value should match each other, IPSec client and iBG system.

IPSec client cannot establish an IPSec SA with timeout error

While trying to connect iBG system with an IPSec client in Windows(such as SafeNet SoftRemote), it fails to establish an IPSec tunnel due to IPSec configuration problem.

Symptoms

An IKE SA is established successfully, but the timeout error such as the following occurred in the log of the IPSec client.

```
6-13: 16:32:34.486 My Connections\DUT-1 - Initiating IKE
Phase 1 (IP ADDR=20.1.1.1)
 6-13: 16:32:34.486 My Connections\DUT-1 - SENDING>>>>
ISAKMP OAK MM (SA, VID 2x)
 6-13: 16:32:34.496 My Connections\DUT-1 - RECEIVED<<<
ISAKMP OAK MM (SA, VID 2x)
 6-13: 16:32:34.606 My Connections\DUT-1 - Peer is NAT-T
draft-02 capable
 6-13: 16:32:34.606 My Connections\DUT-1 - Peer supports
Dead Peer Detection Version 1.0
 6-13: 16:32:34.606 My Connections\DUT-1 - Dead Peer
Detection enabled
 6-13: 16:32:34.616 My Connections\DUT-1 - SENDING>>>>
ISAKMP OAK MM (KE, NON, NAT-D 2x, VID 4x)
 6-13: 16:32:34.626 My Connections\DUT-1 - RECEIVED<<<
ISAKMP OAK MM (KE, NON, NAT-D 2x)
 6-13: 16:32:34.796 My Connections\DUT-1 - SENDING>>>>
ISAKMP OAK MM *(ID, HASH, NOTIFY:STATUS_REPLAY_STATUS,
NOTIFY:STATUS_INITIAL_CONTACT)
 6-13: 16:32:34.816 My Connections\DUT-1 - RECEIVED<<<
ISAKMP OAK MM *(ID, HASH, NOTIFY:STATUS_INITIAL_CONTACT)
 6-13: 16:32:34.816 My Connections\DUT-1 - Established IKE
SA
 6-13: 16:32:34.816    MY COOKIE ae 76 73 63 8c 4c f6 c6
 6-13: 16:32:34.816    HIS COOKIE 9e 67 b 5d bf 73 e6 5d
 6-13: 16:32:34.836 My Connections\DUT-1 - Initiating IKE
Phase 2 with Client IDs (message id: 3C94C426)
 6-13: 16:32:34.836   Initiator = IP ADDR=222.2.2.20, prot =
0 port = 0
```

```
 6-13: 16:32:34.836   Responder = IP
SUBNET/MASK=201.0.0.0/255.0.0.0, prot = 0 port = 0
 6-13: 16:32:34.836 My Connections\DUT-1 - SENDING>>>>
ISAKMP OAK QM *(HASH, SA, NON, ID 2x)
 6-13: 16:32:49.878 My Connections\DUT-1 - QM re-keying
timed out. Retry count: 1
 6-13: 16:32:49.878 My Connections\DUT-1 - SENDING>>>>
ISAKMP OAK QM *(Retransmission)
 6-13: 16:33:04.960 My Connections\DUT-1 - QM re-keying
timed out. Retry count: 2
 6-13: 16:33:04.960 My Connections\DUT-1 - SENDING>>>>
ISAKMP OAK QM *(Retransmission)
 6-13: 16:33:19.991 My Connections\DUT-1 - QM re-keying
timed out. Retry count: 3
 6-13: 16:33:19.991 My Connections\DUT-1 - SENDING>>>>
ISAKMP OAK QM *(Retransmission)
 6-13: 16:33:35.073 My Connections\DUT-1 - Exceeded 3 re-
keying attempts (message id: 3C94C426)
 6-13: 16:33:35.073 My Connections\DUT-1 - Disconnecting IKE
SA negotiation
 6-13: 16:33:35.073 My Connections\DUT-1 - Deleting IKE SA
(IP ADDR=20.1.1.1)
 6-13: 16:33:35.073    MY COOKIE ae 76 73 63 8c 4c f6 c6
 6-13: 16:33:35.073    HIS COOKIE 9e 67 b 5d bf 73 e6 5d
 6-13: 16:33:35.093 My Connections\DUT-1 - SENDING>>>>
ISAKMP OAK INFO *(HASH, DEL)
 6-13: 16:36:06.981
```

Possible Causes

- Missing IPSec policy configuration
- Mismatch of IPSec ID configuration

Troubleshooting

1. Use the ‘show crypto dynamic ipsec policy all’ command to make sure that the policy for your IPSec client is configured.

2. Check the match address of the IPSec policy. The match address configuration on iBG system should match the remote party identity configuration on the IPSec client.

IPSec client cannot establish an IPSec SA with NO_PROPOSAL_CHOSEN error

While trying to connect iBG system with an IPSec client in Windows(such as SafeNet SoftRemote), it fails to establish an IPSec tunnel due to IPSec configuration mismatch.

Symptoms

An IKE SA is established successfully, but the 'NO_PROPOSAL_CHOSEN' error such as the following occurred in the log of the IPSec clients.

```
6-13: 16:39:23.934 My Connections\DUT-1 - Initiating IKE
Phase 1 (IP ADDR=20.1.1.1)
 6-13: 16:39:23.934 My Connections\DUT-1 - SENDING>>>> ISAKMP
OAK MM (SA, VID 2x)
 6-13: 16:39:23.975 My Connections\DUT-1 - RECEIVED<<< ISAKMP
OAK MM (SA, VID 2x)
 6-13: 16:39:24.085 My Connections\DUT-1 - Peer is NAT-T
draft-02 capable
 6-13: 16:39:24.085 My Connections\DUT-1 - Peer supports Dead
Peer Detection Version 1.0
 6-13: 16:39:24.085 My Connections\DUT-1 - Dead Peer
Detection enabled
 6-13: 16:39:24.105 My Connections\DUT-1 - SENDING>>>> ISAKMP
OAK MM (KE, NON, NAT-D 2x, VID 4x)
 6-13: 16:39:24.275 My Connections\DUT-1 - RECEIVED<<< ISAKMP
OAK MM (KE, NON, NAT-D 2x)
 6-13: 16:39:24.365 My Connections\DUT-1 - SENDING>>>> ISAKMP
OAK MM *(ID, HASH, NOTIFY:STATUS_REPLAY_STATUS,
NOTIFY:STATUS_INITIAL_CONTACT)
 6-13: 16:39:24.535 My Connections\DUT-1 - RECEIVED<<< ISAKMP
OAK MM *(ID, HASH, NOTIFY:STATUS_INITIAL_CONTACT)
 6-13: 16:39:24.535 My Connections\DUT-1 - Established IKE SA
 6-13: 16:39:24.535   MY COOKIE a3 b5 a5 78 da bc cc 7c
 6-13: 16:39:24.535   HIS COOKIE 24 ae be 96 4b 5 e5 0
 6-13: 16:39:24.545 My Connections\DUT-1 - Initiating IKE
Phase 2 with Client IDs (message id: C06766D6)
 6-13: 16:39:24.545  Initiator = IP ADDR=222.2.2.20, prot = 0
port = 0
```

```
 6-13: 16:39:24.545   Responder = IP
SUBNET/MASK=201.0.0.0/255.0.0.0, prot = 0 port = 0
 6-13: 16:39:24.545 My Connections\DUT-1 - SENDING>>>> ISAKMP
OAK QM *(HASH, SA, NON, ID 2x)
 6-13: 16:39:24.806 My Connections\DUT-1 - RECEIVED<<< ISAKMP
OAK INFO *(HASH, NOTIFY:NO_PROPOSAL_CHOSEN)
 6-13: 16:39:24.806 My Connections\DUT-1 - Discarding IPSec
SA negotiation (message id: C06766D6)
 6-13: 16:39:24.816 My Connections\DUT-1 - Discarding IKE SA
negotiation
 6-13: 16:39:24.816 My Connections\DUT-1 - Deleting IKE SA
(IP ADDR=20.1.1.1)
 6-13: 16:39:24.816    MY COOKIE a3 b5 a5 78 da bc cc 7c
 6-13: 16:39:24.816    HIS COOKIE 24 ae be 96 4b 5 e5 0
 6-13: 16:39:24.816 My Connections\DUT-1 - SENDING>>>> ISAKMP
OAK INFO *(HASH, DEL)
```

Possible Causes

Mismatch of IPSec policy parameters.

Troubleshooting

1. Use the ‘show crypto dynamic ipsec policy all’ command to make sure that the policy for your IPSec client is configured.

2. Check the configuration of the IPSec policy parameters such as encryption algorithm, hash algorithm, Diffie-Hellman group, etc. Every value should match each other, IPSec client and iBG system.

IPSec client cannot connect a server over an IPSec tunnel

While trying to connect a server located on the corp network of iBG system after establishing an IPSec tunnel with an IPSec client in Windows(such as SafeNet SoftRemote), it fails to connect the server due to firewall policy configuration.

Symptoms

An IPSec tunnel has been established successfully. But the the IPSec client cannot connect to the server on the corp network of iBG system with the following log:

```
*Jun 13,2007,19:02:00 #FIREWALL-critical: 222.2.2.20:1163 ->
201.1.1.2:2
1 tcp Deny access policy(corp:100) matched, dropping packet
 *Jun 13,2007,19:02:01 #FIREWALL-critical: 222.2.2.20:1163 -
> 201.1.1.2:21 tcp D
eny access policy(corp:100) matched, dropping packet
 *Jun 13,2007,19:02:01 #FIREWALL-critical: 222.2.2.20:1163 -
> 201.1.1.2:21 tcp D
eny access policy(corp:100) matched, dropping packet
```

Possible Causes

The connection packets were dropped by the firewall policy.

Troubleshooting

1. Use the ‘show firewall policy corp’ command to confirm the firewall policy is configured as ‘deny’ for the connection from the client.

2. Change the firewall policy so that the connection from the client can be allowed.

IPSec client cannot establish an IPSec tunnel with user authentication timeout

While trying to connect iBG system with an IPSec client in Windows(such as SafeNet SoftRemote), it fails in establishing an IPSec tunnel due to RADIUS server configuration.

Symptoms

An IKE SA has been established successfully, but after entering the user ID and password, the user authentication timeout error such as the following occurred in the log of the IPSec client.

```
6-14: 10:05:25.833 My Connections\DUT-1 - Initiating IKE
Phase 1 (IP ADDR=20.1.1.1)
 6-14: 10:05:25.843 My Connections\DUT-1 - SENDING>>>>
ISAKMP OAK MM (SA, VID 2x)
 6-14: 10:05:25.853 My Connections\DUT-1 - RECEIVED<<<
ISAKMP OAK MM (SA, VID 2x)
 6-14: 10:05:25.923 My Connections\DUT-1 - Peer is NAT-T
draft-02 capable
 6-14: 10:05:25.923 My Connections\DUT-1 - Peer supports
Dead Peer Detection Version 1.0
 6-14: 10:05:25.923 My Connections\DUT-1 - Dead Peer
Detection enabled
 6-14: 10:05:25.933 My Connections\DUT-1 - SENDING>>>>
ISAKMP OAK MM (KE, NON, NAT-D 2x, VID 4x)
 6-14: 10:05:26.153 My Connections\DUT-1 - RECEIVED<<<
ISAKMP OAK MM (KE, VID, NON, NAT-D 2x)
 6-14: 10:05:26.153 My Connections\DUT-1 - Dead Peer
Detection enabled
 6-14: 10:05:26.234 My Connections\DUT-1 - SENDING>>>>
ISAKMP OAK MM *(ID, HASH, NOTIFY:STATUS_REPLAY_STATUS,
NOTIFY:STATUS_INITIAL_CONTACT)
 6-14: 10:05:26.414 My Connections\DUT-1 - RECEIVED<<<
ISAKMP OAK MM *(ID, HASH, NOTIFY:STATUS_INITIAL_CONTACT)
 6-14: 10:05:26.414 My Connections\DUT-1 - Established IKE SA
 6-14: 10:05:26.414    MY COOKIE 5f 9b a1 79 79 5 98 c8
 6-14: 10:05:26.414    HIS COOKIE 6 8e 3c f 88 96 bb e7
 6-14: 10:05:26.724 My Connections\DUT-1 - RECEIVED<<<
ISAKMP OAK TRANS *(HASH, ATTR)
```

```
 6-14: 10:05:34.796 My Connections\DUT-1 - SENDING>>>>
ISAKMP OAK TRANS *(HASH, ATTR)
 6-14: 10:05:50.038 My Connections\DUT-1 - QM re-keying
timed out. Retry count: 1
 6-14: 10:05:50.038 My Connections\DUT-1 - SENDING>>>>
ISAKMP OAK TRANS *(Retransmission)
 6-14: 10:06:05.089 My Connections\DUT-1 - QM re-keying
timed out. Retry count: 2
 6-14: 10:06:05.089 My Connections\DUT-1 - SENDING>>>>
ISAKMP OAK TRANS *(Retransmission)
 6-14: 10:06:20.502 My Connections\DUT-1 - QM re-keying
timed out. Retry count: 3
 6-14: 10:06:20.502 My Connections\DUT-1 - SENDING>>>>
ISAKMP OAK TRANS *(Retransmission)
 6-14: 10:06:30.886 My Connections\DUT-1 - RECEIVED<<<
ISAKMP OAK TRANS *(HASH, ATTR)
 6-14: 10:06:30.997 My Connections\DUT-1 - User
Authentication failed.
 6-14: 10:06:31.007 My Connections\DUT-1 - SENDING>>>>
ISAKMP OAK TRANS *(HASH, ATTR)
 6-14: 10:06:31.057 My Connections\DUT-1 - Deleting IKE SA
(IP ADDR=20.1.1.1)
 6-14: 10:06:31.057   MY COOKIE 5f 9b a1 79 79 5 98 c8
 6-14: 10:06:31.057   HIS COOKIE 6 8e 3c f 88 96 bb e7
 6-14: 10:06:31.057 My Connections\DUT-1 - SENDING>>>>
ISAKMP OAK INFO *(HASH, DEL)
 6-14: 10:06:31.117 My Connections\DUT-1 - RECEIVED<<<
ISAKMP OAK INFO *(HASH, DEL)
 6-14: 10:06:35.163 My Connections\DUT-1 - RECEIVED<<<
ISAKMP OAK INFO *(HASH, DEL)
 6-14: 10:06:39.118 My Connections\DUT-1 - RECEIVED<<<
ISAKMP OAK INFO *(HASH, DEL)
 6-14: 10:06:43.114 My Connections\DUT-1 - RECEIVED<<<
ISAKMP OAK INFO *(HASH, DEL)
```

Possible Causes

- Missing RADIUS server configuration
- Mismatch of RADIUS server IP address
- Mismatch of RADIUS shared key configuration
- Inactive RADIUS server

Troubleshooting

1. Use the ‘show aaa radius’ command to make sure that the configuration of RADIUS server is configured as correct values.

2. Check that the external RADIUS server is active.

IPSec client cannot establish an IPSec tunnel with user authentication failure

While trying to connect iBG system with an IPSec client in Windows(such as SafeNet SoftRemote), it fails in establishing an IPSec tunnel due to an invalid user ID or password.

Symptoms

An IKE SA has been established successfully. But after entering the user ID and password, the user authentication failure error such as the following occurs in the log of IPSec client.

```
6-14: 10:18:05.155 My Connections\DUT-1 - Initiating IKE
Phase 1 (IP ADDR=20.1.1.1)
 6-14: 10:18:05.155 My Connections\DUT-1 - SENDING>>>> ISAKMP
OAK MM (SA, VID 2x)
 6-14: 10:18:05.165 My Connections\DUT-1 - RECEIVED<<< ISAKMP
OAK MM (SA, VID 2x)
 6-14: 10:18:05.265 My Connections\DUT-1 - Peer is NAT-T
draft-02 capable
 6-14: 10:18:05.265 My Connections\DUT-1 - Peer supports Dead
Peer Detection Version 1.0
 6-14: 10:18:05.265 My Connections\DUT-1 - Dead Peer
Detection enabled
 6-14: 10:18:05.275 My Connections\DUT-1 - SENDING>>>> ISAKMP
OAK MM (KE, NON, NAT-D 2x, VID 4x)
 6-14: 10:18:05.465 My Connections\DUT-1 - RECEIVED<<< ISAKMP
OAK MM (KE, VID, NON, NAT-D 2x)
 6-14: 10:18:05.465 My Connections\DUT-1 - Dead Peer
Detection enabled
 6-14: 10:18:05.756 My Connections\DUT-1 - SENDING>>>> ISAKMP
OAK MM *(ID, HASH, NOTIFY:STATUS_REPLAY_STATUS,
NOTIFY:STATUS_INITIAL_CONTACT)
 6-14: 10:18:05.766 My Connections\DUT-1 - RECEIVED<<< ISAKMP
OAK MM *(ID, HASH, NOTIFY:STATUS_INITIAL_CONTACT)
 6-14: 10:18:05.766 My Connections\DUT-1 - Established IKE SA
 6-14: 10:18:05.766   MY COOKIE 3c 76 ed f1 a9 c8 61 b4
 6-14: 10:18:05.766   HIS COOKIE e f1 c9 aa a4 67 ea de
 6-14: 10:18:06.046 My Connections\DUT-1 - RECEIVED<<< ISAKMP
OAK TRANS *(HASH, ATTR)
```

```
 6-14: 10:18:14.879 My Connections\DUT-1 - SENDING>>>> ISAKMP
OAK TRANS *(HASH, ATTR)
 6-14: 10:18:23.010 My Connections\DUT-1 - RECEIVED<<< ISAKMP
OAK TRANS *(HASH, ATTR)
 6-14: 10:18:23.071 My Connections\DUT-1 - User
Authentication failed.
 6-14: 10:18:23.071 My Connections\DUT-1 - SENDING>>>> ISAKMP
OAK TRANS *(HASH, ATTR)
 6-14: 10:18:23.181 My Connections\DUT-1 - Deleting IKE SA
(IP ADDR=20.1.1.1)
 6-14: 10:18:23.181    MY COOKIE 3c 76 ed f1 a9 c8 61 b4
 6-14: 10:18:23.181    HIS COOKIE e f1 c9 aa a4 67 ea de
 6-14: 10:18:23.181 My Connections\DUT-1 - SENDING>>>> ISAKMP
OAK INFO *(HASH, DEL)
 6-14: 10:18:23.241 My Connections\DUT-1 - RECEIVED<<< ISAKMP
OAK INFO *(HASH, DEL)
 6-14: 10:18:27.327 My Connections\DUT-1 - RECEIVED<<< ISAKMP
OAK INFO *(HASH, DEL)
 6-14: 10:18:31.322 My Connections\DUT-1 - RECEIVED<<< ISAKMP
OAK INFO *(HASH, DEL)
 6-14: 10:18:35.318 My Connections\DUT-1 - RECEIVED<<< ISAKMP
OAK INFO *(HASH, DEL)
```

Possible Causes

- Invalid user id
- Mismatch of user password

Troubleshooting

1. Check the user list configured on the external RADIUS server.
2. Try again with the valid user ID and password.

CHAPTER 5. VOICE

Max call limit alarm

This is an alarm created when a certain percentage is reached on the basis of the pre-configured max call and max call threshold alarm.

Symptoms

On the iBG system, the following event has occurred.

```
#Feb 09 11:57:45 critical     EVENT      Exceeding a major
threshold of the system max call limit   RAISE
#Feb 09 11:58:28 informational EVENT     Exceeding a major
threshold of the system max call limit   CLEAR
#Feb 09 11:59:23 error        EVENT      Exceeding a minor
threshold of the system max call limit   RAISE
 #Feb 09 11:59:25 informational EVENT    Exceeding a minor
threshold of the system max call limit   CLEAR
```

Possible Causes

- Current call count has reached the pre-configured threshold alarm value.
  - Minor threshold limitation value = system wide max calls * minor threshold alarm max-call/100
  - Major threshold limitation value = system wide max calls * major threshold alarm max-call/100

Troubleshooting

1. Change threshold alarm max-call value.

2. Change system-wide max-call count(default max-call count is configured as system maximum value).

To change theshold alarm max-call value, use the call-admission threshold alarm max-call CLI command in the global configuration command mode. To check current value use the show running-config command.

call-admission threshold alarm max-call min <value> maj <value>
no call-admission threshold alarm max-call

min <value>: the percentage of the current call count against max call count for which a minor alarm would be created. Default value is 70. Range is 1~99.
maj <value>: the percentage of the current call count against max call count for which a major alarm would be created. Default value is 80. Range is 1~99.

To change the max call used as the default, use the ‘call-admission max-calls’ command in the global configuration command mode. To check the current value use the show running-config command.

call-admission max-calls <value>

value: Designates max calls that are admitted. A number of 1~20,000 can be used.

Max DSP limit alarm

It is an alarm created when a certain percentage is reached on the basis of the configured max DSP channel usage threshold.

Symptoms

On the Ubigate iBG system, the following event has occurred.

```
#Feb 09 12:00:00 critical     EVENT     Exceeding a major
threshold of the DSP channel capacity limit  RAISE
#Feb 09 12:00:03 informational EVENT     Exceeding a major
threshold of the DSP channel capacity limit  CLEAR
#Feb 09 12:00:12 error        EVENT      Exceeding a minor
threshold of the DSP channel capacity limit  RAISE
#Feb 09 12:00:15 informational EVENT     Exceeding a minor
threshold of the DSP channel capacity limit  CLEAR
```

Possible Causes

Current DSP usage has been reached on the pre-configured threshold alarm value.

Troubleshooting

1. Change threshold alarm max-dsp value.

2. Change your DSP card to have higher performance

To change the theshold alarm max-dsp value, use the call-admission threshold alarm max-dsp CLI command in global configuration command mode.
To check the current value use the show running-config command.

call-admission threshold alarm max-dsp min <value> maj <value>
no call-admission threshold alarm max-dsp

min <value>: the percentage of current used dsp channel against max dsp channel for which a minor alarm would be created. Default value is 70. Range is 1~99.
maj <value>: the percentage of current used dsp channel against max dsp channel for which a major alarm would be created. Default value is 80. Range is 1~99.

It is impossible to set up the value of max DSP channel used as the default, the system decides automatically according to the type of the installed DSP card.

SIP entity connection fail alarm

This is an alarm created when registering fails after periodically trying to register the gateway using the SIP REGISTER message in call-server.

Symptoms

On the iBG system, the following event has occurred:

```
#Feb 09 12:00:20 critical         EVENT    Connection fails
between system and SIP entity RAISE
 #Feb 09 12:00:24 informational    EVENT    Connection fails
between system and SIP entity CLEAR
```

Possible Causes

- Call server which is configured by iBG gateway system is not running.
- Call server network is unreachable from iBG gateway system.
- In the call server configured by iBG, system this iBG system is not configured or configured with invalid data.

Troubleshooting

1. Verify the configured call server system is running.

2. Verify that your network is alive inter iBG gateway and call server system.

3. Verify your iBG system is configured in the call server system.
   HMSGUI → configuration → iBG system.

Gatekeeper connection fail alarm

This is an alarm created when the communication with H.323 Gatekeeper through RegistrationRequest(RRQ) message has failed.

Symptoms

On the iBG system, following event has occurred.

```
#Feb 09 12:00:33 critical       EVENT    Connection fails
between H.323 entity  RAISE
 #Feb 09 12:00:36 informational EVENT    Connection fails
between H.323 entity  CLEAR
```

Possible Causes

- Gatekeeper which is configured by iBG gateway system is not running.
- Gatekeeper network is unreachable from iBG gateway system.
- In the gatekeeper configured by iBG system, this iBG system is not configured or configured with invalid data.

Troubleshooting

1. Verify configured gatekeeper is running.
2. Verify your network is alive inter iBG gateway and gatekeeper.
3. Verify your iBG system is configured in gatekeeper(refer to your gatekeeper system manual).

H.323 trunk call trouble

When the H.323 trunk is in trouble, you can try to check the activation of H.323 service.

Symptoms

When a caller tries to call with the H.323 trunk, he hears a reorder tone sound. Dial-peer OUT-STAT is down.

```
iBG# # show dial-peer voice summary
SESS-TARGET                PORT     ADMIN OPER OUT-STAT
-------------------------- -------- ----- ---- --------
ipv4:172.19.30.1                     up    up   down
```

Possible Causes

Not activated H.323 service.

Troubleshooting

1. Check activation of H.323 service by the following command:

```
iBG# show h323-gateway service
H.323 service is down.
```

2. Try activating H.323 service using the following command:

```
iBG/configure/voip-gateway/h323-gateway# no shutdown
```

H.323 gatekeeper trouble

If H.323 trunk has trouble, and the session target of the dial-peer is a ‘gatekeeper’. you can try to check registration with the H.323 gatekeeper.

Symptoms

When the caller tries to call with the H.323 trunk, he hear a reorder tone sound. Dial-peer OUT-STAT is down.

```
iBG# # show dial-peer voice summary
SESS-TARGET                 PORT    ADMIN OPER OUT-STAT
--------------------------- -------- ----- ---- --------
gatekeeper                           up    up   down
```

Possible Causes

iBG system didn’t registered with the H.323 gatekeeper.

Troubleshooting

1. Verify configured gatekeeper is running.
2. Verify your network is alive inter iBG system gateway and gatekeeper.
3. Verify your iBG system is configured in the gatekeeper.(refer to your gatekeeper system manual)

Fail to hear a color ring with the H.323 trunk.

In H.323's slow-call-start mode, it is possible that the caller cannot hear a color ring.

Symptoms

When the caller tries to call with H.323 trunk, he cannot hear a color ring or announcement.

Possible Causes

H.323 call-start-mode is 'slow'.

```
iBG# show h323-gateway detailed
============================================================
   VOICE SERVICE H323
============================================================
 dtmf-relay: [rtp-nte]
 tech-prefix: []
 display-info: []
 h225
    call-start: slow
    h245-tunnel: off
    early-h245: off
    call-response: alert
    t301: 180
    t303: 15
```

Troubleshooting

Change the call start mode to 'fast' using the following command:

```
iBG/configure# voice service h323 h225 call-start fast
```

FXO connect alarm

This is an alarm to notify whether ports are connected or not in analog channels of the FXO card using loop start.

Symptoms

On the iBG system, the following event has occurred.

```
#Feb 09 12:00:39 error          EVENT   Notify that FXO port
is connected when using Loop-start only  RAISE
 #Feb 09 12:00:42 informational EVENT   Notify that FXO port
is connected when using Loop-start only  CLEAR
```

Possible Causes

- The physical port connected to FXO has been removed.
- The FXS port that connected at the opposite side has been removed.
- The FXO goes off-hook when feeding voltage of the telephone line is too low or unstable.

Troubleshooting

1. Check that the port line is inserted correctly.
2. check that it is inserted and is connected at the remote FXS port.
3. Reduce the *supervisory disconnect line-volt-threshold* value on the FXO voice-port. e.g 1.4 V or 0 V.

FXO voice quality tunning

This is for reducing echo problems when a subscriber make a call through an analog FXO port.

Symptoms

When a subscriber makes a call through an analog FXO port, he hear an echo or feedback.

Possible Causes

- Analog line impedance is not matched with the analog FXO.
- Output loudness of FXO port is too high.

Troubleshooting

1. Check that the *impedance* of the analog FXO voice port is matched properly with CO or PBX line. If CO is far from Ubigate, change the impedance with the distance. e.g., 600r is for 0~1 km, complex4 is for 2 km, complex9 is for 3 km, complex6 is for 4 km distance from CO.

2. Apply the *output attenuation* command on the analog FXO voice port to reduce output gain. e.g., *output attenuation 6* command will reduce the output gain of voice port by 6 dB.

FXO Caller-ID detection

This is the Caller-ID detection method from incoming calls through an analog FXO.

Symptoms

When a call is incoming through an analog FXO, the callee's phone does not display the Caller-ID.

Possible Causes

- CO or PBX connected FXO does not provide Caller-ID service.
- Caller-ID detection method is not configured appropriately with CO or PBX.

Troubleshooting

1. Connect the line directly with your Caller-ID phone instead of Ubigate FXO. If the phone still does not display it, you need to ask the CO or PBX operator about the Caller-ID service.

2. If there is no problem in procedure 1, the FXO voice-port configuration may be wrong. The Caller-ID standard may be different by country. Also, it may be different by exchange type of CO even in the same country. You must configure the FXO voice-port appropriately with the Caller-ID standard of your region. Ubigate supports various standards. For details, refer to the *Configuring Analog FXO voice port* section of configuration guide.

FXO Ground-Start outbound call failures

This is troubleshooting for an analog FXO using ground-start signaling.

Symptoms

When an analog FXO connected with CO or PBX by ground-start signaling, the Outbound call through FXO failed.

Possible Causes

- The FXO voice-port is not configured as ground-start.
- Tip and Ring lead polarity of the cable is not matched with Ubigate FXO.
- Earth connection of Ubigate is bad.

Troubleshooting

1. Check that the voice port is configured as ground-start.

2. Ground-start signaling is polarity-sensitive, so it is important that the Tip & Ring leads on the RJ-11 line are properly connected between CO and the FXO port. If the polarity is the reverse of what it needs to be, inbound calls from the CO to Ubigate work, but outbound call attempts from Ubigate to the CO fail 100 percent of the time. The easiest way to quickly reverse the polarity on an RJ-11 line is to insert an RJ-45 cable extender and a short span of the two-wire RJ-11 crossover cable inline between the existing cabling and the voice-port.

3. Ensure that Ubigate chassis ground reference and the electrical ground reference, which the CO provides for the ground-start lines, are the same. For grounding Ubigate, refer to Installation Manual.

FXS port Line-Lockout

This is notification that a phone or FXO connected with the analog FXS port remain off-hook for more than 30 seconds though there is no call on the port.

Symptoms

On the Ubigate system, the following event has occurred:

```
*Jun 01,2007,08:30:28 #ASCC-notification:  [ASCC]CCA(-/-)
CTX(14)DSP#(16)TS#(258)PORT:0/2/1::is Line-Lockout

TOP56# show voice p s
PORT     CH SIG-TYPE   ADMIN OPER IN STATUS   OUT STATUS     EC
======   == ========== ===== ==== ========= =============== ==
0/1/0    -- fxo-ls     up    up   idle         idle           y
0/1/1    -- fxo-ls     up    up   idle         idle           y
0/1/2    -- fxo-ls     up    up   idle         idle           y
0/1/3    -- fxo-ls     up    up   idle         idle           y
0/2/0    -- fxs-ls     up    up   on-hook      idle           y
0/2/1    -- fxs-ls     up    -    line-lockout line-lockout   y
```

Possible Causes

- The phone receiver is off the hook.
- Opposite side of is busyout or abnormal state if the port is connected with other equipment.

Troubleshooting

1. Hang up the phone receiver.
2. Check the port status of the opposite side connected with the FXS port.

SIP-UA cannot register to the SIP server

Ubigate iBG system as a SIP user agent cannot register to the SIP server - i.e. SIP Registrar.

Symptoms

An User - who is using an analog phone connected to Ubigate iBG system - cannot make an inbound/outbound VoIP calls from/to the SIP server. The user hears immediate busy tone when dial-out.

SIP-UA registration information shown as follows;

```
Ubigate# show sip-ua registration
ID   USERINFO   EXPIRES      STATUS  PORT    AUTHENTICATION
-------------------------------------------------------------
1000 1000       3600   3600   no     0/2/0   1000[****]
-------------------------------------------------------------
Number of 0/total(1) is registered
```

‘401 Unauthorized’ or ‘407 Proxy Authentication Required’ Response received when SIP debug is turned on.

```
Ubigate# debug sip dump event
10:56:40.060 Tx ---> 10.1.1.100/5060   REGISTER
sip:samsung.com SIP/2.0
10:56:40.070 Rx <---- 10.1.1.100/5060   SIP/2.0 401
Unauthorized
10:56:40.080 Tx ---> 10.1.1.100/5060   REGISTER
sip:samsung.com SIP/2.0
10:56:40.090 Rx <---- 10.1.1.100/5060   SIP/2.0 401
Unauthorized
```

‘403 Forbidden’ Response received when SIP debug is turned on.

```
Ubigate# debug sip dump event
10:56:40.060 Tx ---> 10.1.1.100/5060   REGISTER
sip:samsung.com SIP/2.0
10:56:40.070 Rx <---- 10.1.1.100/5060   SIP/2.0 403 Forbidden
```

‘404 Not Found’ Response received when SIP debug is turned on.

```
Ubigate# debug sip dump event
10:56:40.060 Tx ---> 10.1.1.100/5060    REGISTER
sip:samsung.com SIP/2.0
10:56:40.730 Rx <---- 10.1.1.100/5060   SIP/2.0 404 Not Found
```

Possible Causes

Minimum configuration on Ubigate iBG system missed.
A dial-peer for the user configuration is mismatched with user provisioning information on the SIP sever.

Troubleshooting

1. Check the IP address of the registrar and sip-server on Ubigate iBG system. It should indicate the IP address of the SIP server.

2. Check if the ‘register e164’ configuration is missed on the dial-peer - i.e. dial-peer voice pots ‘tag-number’. Without this, the dial-peer doesn’t register to the server and the dial-peer is not shown from ‘show sip-ua registration’.

3. When Ubigate iBG system receives ‘401 Unauthorized’ or ‘407 Proxy Authentication Required’ again although it sent out a REGISTER request with credential, check if username and password of the dial-peer - i.e. user analog phone - is valid with user provisioning information on the server.

4. When Ubigate iBG system receives ‘403 Forbidden’, check if the domain name of Ubigate iBG system is valid with the server or check if the user is restricted in the server.

5. When Ubigate iBG system receives ‘404 Not Found’, check if the dial-peer - i.e. user analog phone - is provisioned on the server.

SIP-UA cannot register to Ubigate iPX

Ubigate iBG system as a SIP user agent cannot register to Ubigate iPX. Ubigate iBG system seems to register to Ubigate iPX but operation mode is still shown as ‘Survivable mode’.

Symptoms

An User - who is using an analog phone connected to Ubigate iBG system - cannot make an inbound/outbound VoIP calls from/to the SIP server. The user hears immediate busy tone at dial-out.

SIP-UA registration information shown as follows:

```
Ubigate# show sip-ua registration
Call-Server(GW-URI): Expires=60 NOT Registred
                sip:ibg@sec.com
ID   USERINFO   EXPIRES     STATUS PORT    AUTHENTICATION
-------------------------------------------------------------
1000 1000      3600   3600   yes    0/2/0  1000[****]
-------------------------------------------------------------
Number of 1/total(1) is registered
```

VoIP-Gateway status information shown as follows:

```
Ubigate# show voip gateway
VoIP Gateway Status
Gateway Status: Survivable mode
  Call-server: ipv4:10.1.1.100 UDP
    Gateway name: sip:ibg@sec.com
    Keepalive: Expire timer 60s, Retry timer 10s

Gateway IP address
  Binding status: ethernet 0/2, ethernet 0/2
  Control IP address: ipv4:10.1.1.1
  Media IP address: ipv4:10.1.1.1

Gateway Accounting: ENABLED
Default domain name: sec.com
VoIP Protocol status
  VoIP service: ENABLED
```

```
  SIP service: ENABLED
  H.323 service: DISABLED

VoIP Media configuration
  QoS Media: ef
  QoS Signal: ef
  RTP Start Port: 16384, Range: 512
  RTCP Interval: 5 (1-10)Number of 1/total(1) is registered
```

Possible Causes

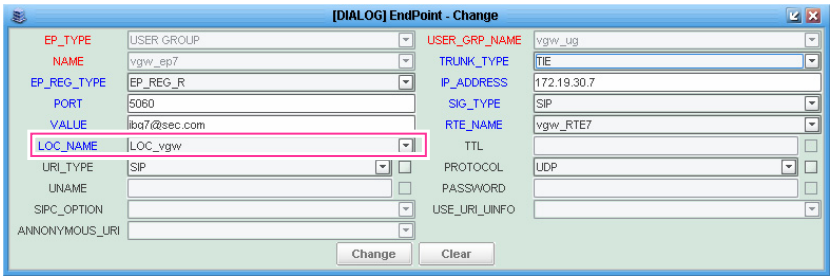
Minimum configuration on Ubigate iBG system missing.
A dial-peer for the user configuration is mismatched with user provisioning information on Ubigate iPX.

Troubleshooting

1. Refer to ‘SIP-UA cannot register to the SIP server’, and check items listed.

2. When the operation state of the VoIP Gateway is ‘Survivable mode’, the GW-URI of Ubigate iBG system may not be registered to Ubigate iPX while all the dial-peers - i.e. user analog phones - are registered.

3. Check if the GW-URI of Ubigate iBG system is valid with the endpoint name configured in Ubigate iPX. The following examples show that the name of Ubigate iBG system is ‘ibg7’ instead of ‘ibg’.



4. The other information such as IP Address, Transport protocol type and port should match with the above.

Outbound SIP Calls fail because of CODEC mismatch

Establishing VoIP call fails when CODECs among VoIP equipments are different.

Symptoms

A User - who is using an analog phone connected to Ubigate iBG system - cannot make an inbound/outbound VoIP calls from/to the SIP server. The user hears immediate busy tone at dial-out.

'488 Not Acceptable Here' Response received when SIP debug is turned on.

```
Ubigate# debug sip dump event
10:56:40.060 Tx ---> 10.1.1.100/5060    INVITE
sip:2000@samsung.com SIP/2.0
10:56:40.070 Rx <---- 10.1.1.100/5060   SIP/2.0 488 Not
Acceptable Here
10:56:40.080 Tx ----> 10.1.1.100/5060   ACK
sip:2000@samsung.com SIP/2.0
```

Service VoIP information shown as follows:

```
Ubigate# show voice service voip
VoIP Service Feature
Codec List: System Default
   Preference 1     : G.711  a-law   64 kbps  20 ms
   Preference 2     : G.711  u-law   64 kbps  20 ms
   Preference 3     : G.729           8 kbps  20 ms

 Conference
   Feature code     : *21
   Main number      : NONE
   Max participants : 16
   Room number      : NONE

 Digital Gain
   Input            : 0.0 dB
   Output           : 0.0 dB

 FAX Protocol       : NONE
   ECM              : ENABEL
   Rate             : 14400 bps
```

```
Playout Delay     : Adaptive Mode
  Nominal Delay   :   80 ms
  Minimum Delay   :   20 ms
  Maximum Delay   :  200 ms

Timer
  Media inactivity detection: DISABLE

VAD: DISABLE
```

Possible Causes

CODEC is not allowed at the remote peer - i.e. SIP phone or gateway.

Troubleshooting

1. Check if Ubigate iBG system set CODEC information allowed on the network.

2. Ubigate default CODEC list is G.711 A-law, G.711 Mu-law and G.729A, but previous version used G.729A as its default CODEC.

Outbound SIP Calls fail because of Restriction

Establishing VoIP call fails and '403 Restricted' response message received.

Symptoms

A User - who is using an analog phone connected to Ubigate iBG system - cannot make an inbound/outbound VoIP calls from/to the SIP server. The user hears immediate busy tone at dial-out.

'403 Restricted' Response received when SIP debug is turned on.

```
Ubigate# debug sip dump event
10:56:40.060 Tx   ----> 10.1.1.100/5060    INVITE
sip:0011322791000@samsung.com SIP/2.0
10:56:40.070 Rx   <---- 10.1.1.100/5060    SIP/2.0 403
Restricted
10:56:40.080 Tx   ----> 10.1.1.100/5060    ACK
sip:0011322791000@samsung.com SIP/2.0
```

Possible Causes

Analog phones users may be restricted to dial-out from the SIP server.
The domain name of the analog phone user may be different from the server.

Troubleshooting

1. Check if the user is provisioned service restriction on the SIP server.

2. Check if the domain name - 'samsung.com' from the above example - is different from the SIP server configuration.

3. Need to contact the administrator of the SIP server. There are not many things to be done on the Ubigate iBG system side.

SIP phone Registration to Ubigate iBG system fails

SIP phone cannot register to Ubigate iBG system when in survivable mode.

Symptoms

An SIP phone user cannot make inbound/outbound calls when in survivable mode. The SIP phone user hears an immediate busy tone at dial-out.

‘488 Not Acceptable Here’ Response received when SIP debug is turned on.

```
Ubigate# debug sip dump event
10:55:40.070 Rx <---- 10.1.1.100/5060   REGISTER
5606:samsung.com SIP/2.0
10:55:40.070 Tx ----> 10.1.1.100/5060   SIP/2.0 404 Not Found
```

Service VoIP information shown as follows:

```
Ubigate# show voip profiles
   Id   Public Number       Extension Contact
------------------------------------------------------------
SIP   1 2795601             5601      10.1.1.199
SIP   2 2795602             5602      10.1.1.198
SIP   3 2795603             5603      10.1.1.197
------------------------------------------------------------
FXS   1 2795600             5600
------------------------------------------------------------
Total 4, SIP 3, FXS 1
```

Possible Causes

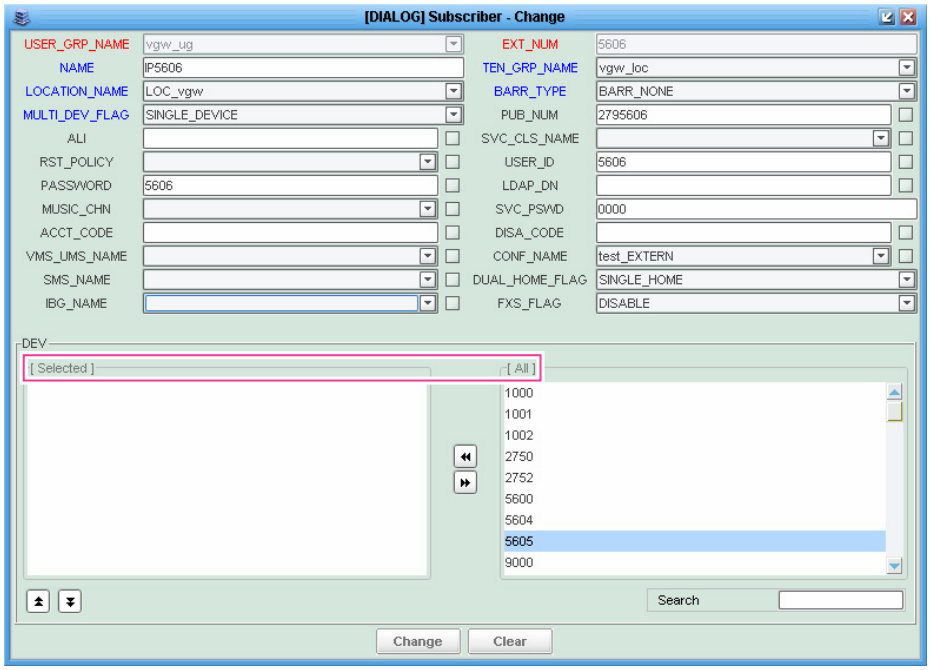
SIP phones are not configured as members of Ubigate iBG system for Survivable telephony mode.

Troubleshooting

1. Check if the SIP server is Ubigate iPX. Only Ubigate iPX/iBG system can provide Survivable telephony.

2. Check if Ubigate iBG system informed the SIP phone as its survivable user.
   In this example, SIP phones with 5606 is not shown from the result of 'show voip profiles'. This means the SIP phone is not properly configured at Ubigate iBG system.

3. Following example shows that 'IBG_NAME' field of the 5606 SIP phone is blank.



Each SIP message uses different transport protocol

Some SIP messages are using UDP while others are using TLS.

Symptoms

SIP messages are using different transport type per type of message.
For example, REGISTER request is sent through UDP transport protocol while INVITE request is sent through TLS transport protocol.

'REGISTER' request message through TLS when SIP debug is turned on.

```
Ubigate# debug sip dump message
15:29:18.630 SIP Packet Sent(521bytes) --->
172.19.30.230/5061
REGISTER sip:sec.com SIP/2.0
From: <sip:5602@sec.com>;tag=9718855117264741
To: <sip:5602@sec.com>
Call-ID: AAjZoLy-DL4AVQAAAAAAAA@172.19.30.56
CSeq: 50 REGISTER
Via: SIP/2.0/TLS
172.19.30.56:5061;branch=z9hG4bKhsig0000000163AAjZoLy-
DL4AVgAAAAAAAA
Contact:
<sip:5602@172.19.30.56:5061;transport=tls>;expires=3600;q=1.0
Max-Forwards: 70
Expires: 3600
Allow:
INVITE,ACK,BYE,CANCEL,NOTIFY,REFER,OPTIONS,SUBSCRIBE,PRACK,UP
DATE,INFO,MESSAGE
User-Agent: Samsung-iBG-SIPUA-2.0.0.3
Subject: block
Content-Length: 0
```

Possible Causes

Registrar, SIP server, and dial-peer voip are not properly configured.

Troubleshooting

1. The following example shows that the registrar uses UDP while SIP-server uses TLS. In this case, the REGISTER request is send out through UDP. However INVITE and OPTIONS are sent out through TLS. Note that the system default transport type is UDP.

```
Ubigate/configure/voip-gateway/sip-ua# registrar ip-address
ipv4:10.1.1.100

Ubigate/configure/voip-gateway/sip-ua# sip-server ip-address
ipv4:10.1.1.100 transport tls
```

2. The following example shows that registrar uses UDP while SIP-server uses TLS. In this case, the REGISTER request is send out through UDP. However INVITE and OPTIONS are sent out through TLS. Note that the system default transport type is set to TLS.

```
Ubigate/configure/voice/service/sip# transport tls

Ubigate/configure/voip-gateway/sip-ua# registrar ip-address
ipv4:10.1.1.100 transport udp
Ubigate/configure/voip-gateway/sip-ua# sip-server ip-address
ipv4:10.1.1.100

Ubigate# show voip gateway
VoIP Gateway Status
Gateway Status: Standalone mode
  Call-server: DISABLED
  Registrar: ipv4:10.1.1.100 UDP
  SIP-server: ipv4:10.1.1.100 TLS
  MWI-server: DISABLED

Gateway IP address
  Binding status: ethernet 3/0, ethernet 3/0
  Control IP address: ipv4:10.1.1.5
  Media IP address: ipv4:10.1.1.5

Gateway Accounting: DISABLED
Default domain name: sec.com
```

```
VoIP Protocol status
  VoIP service: DISABLED
  SIP service: ENABLED
  H.323 service: DISABLED

VoIP Media configuration
  QoS Media: ef
  QoS Signal: af41
  RTP Start Port: 16384, Range: 512
  RTCP Interval: 5 (1-10)
```

3. Registrar and SIP-server should be configured with same transport protocol type or use ‘voice service sip’ for setting the transport type.

```
Ubigate/configure/voice/service/sip# transport tls
```

4. Using ‘voice service sip’ is recommended to avoid this confusion.

ISDN voice-port down

This troubleshooting is for the ISDN trunk connection for voice.

Symptoms

When a subscriber tries to use ISDN trunk, it does not work when the analog phone is work properly. When you check the voice-port of the trunk, the system displays that the voice-port is down.

```
Router# show voice-port summary
PORT     CH SIG-TYPE   ADMIN OPER IN STATUS  OUT STATUS  EC
======= == ========= ===== ==== ========== ========== ==
0/1/0    01 isdn-bri   up    down out_of_svc out_of_svc y
0/1/0    02 isdn-bri   up    down out_of_svc out_of_svc y
0/2/0    -- fxs-ls     up    up   on-hook       idle     y
0/2/1    -- fxs-ls     up    up   on-hook       idle     y
0/2/2    -- fxs-ls     up    up   on-hook       idle     y
0/2/3    -- fxs-ls     up    up   on-hook       idle     y
1/0:D    01 isdn-pri   down  -    down          down     y
1/0:D    02 isdn-pri   down  -    down          down     y
1/0:D    03 isdn-pri   down  -    down          down     y
1/0:D    04 isdn-pri   down  -    down          down     y
1/0:D    05 isdn-pri   down  -    down          down     y
1/0:D    06 isdn-pri   down  -    down          down     y
1/0:D    07 isdn-pri   down  -    down          down     y
1/0:D    08 isdn-pri   down  -    down          down     y
1/0:D    09 isdn-pri   down  -    down          down     y
1/0:D    10 isdn-pri   down  -    down          down     y
```

Possible Causes

- The ISDN cable is not connected properly.
- A user has not entered the command ‘no shutdown’ at ISDN voice-port after ISDN bundle configuration.
- The network clock does not match the peer system.
- Invalid ISDN bundle configuration.

Troubleshooting

1. Check the ISDN bundle status using the command ‘show isdn status <bundle_name>’. If the Layer 1 Status is not displayed ‘ACTIVE’, check the cable and module.

```
Router# show isdn status pri13
 == USER (1/3) side configuration ==
 Layer 1 Status:
 NOT ACTIVE
 Layer 2 Status:
 NOT ACTIVE TEI MODE POINT-TO-POINT
 Layer 3 Status:
 0 Active Calls
```

2. If the Layer 1 Status is ACTIVE and Layer 2 Status is ‘NOT ACTIVE TEI MODE POINT-TO-POINT’ or ‘NOT ACTIVE TEI MODE MULTIPOINT’, check the ISDN configuration.

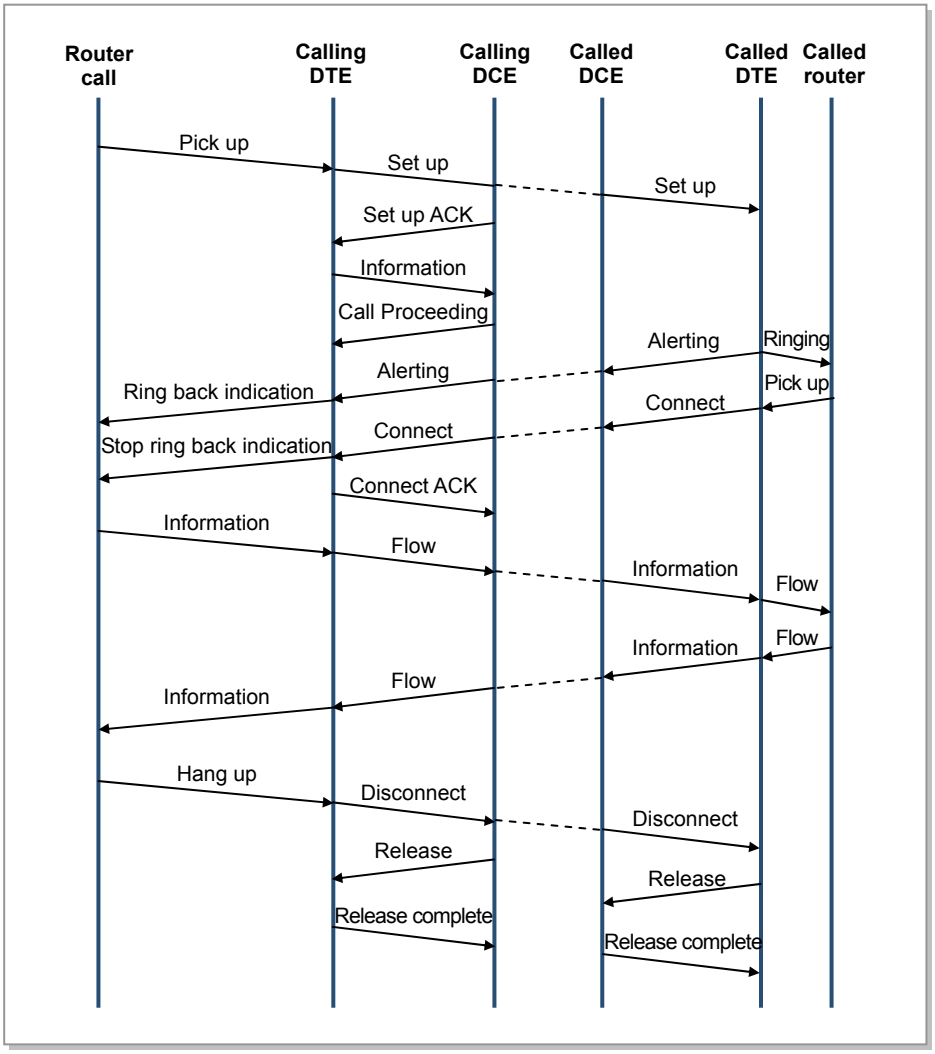
```
Router# show isdn status pri13
== NETWORK (1/0) side configuration ==
 Layer 1 Status:
 ACTIVE
 Layer 2 Status:
 NOT ACTIVE TEI MODE POINT-TO-POINT
 Layer 3 Status:
 0 Active Calls
```

The frequently missing configuration is the following:

- Did you do a ‘no shutdown’ at ISDN voice-port after ISDN bundle configuration?
- Did you configure the switch-type to the same as the peer-system?
- Did you configure the ISDN side to the opposite of peer-system?
- Did you configure the valid tei-mode and tei-value?(BRI only)
- Did you configure the valid network-clock?

3. If the Layer 1 and Layer 2 Status is 'ACTIVE' state, check that the ISDN message flow is working properly. Below the sample ISDN message shows the normal message flow of an ISDN call.

```
Router# debug isdn q931 pri001
-- 18:53:04.240() -- T --> N (Q931,11) --
 MSG: SETUP
 MSGHDR: 08 01 02 05
 BEARCAP: 04 03 80 90 a3
 CHANID: 18 01 89
 PROGIND: 1e 02 81 88
 CGPTYNMB: 6c 09 00 80 37 30 30 36 30 30 30
 CDPTYNMB: 70 08 80 35 35 35 33 30 30 30

 -- 18:53:04.660() -- N --> T (Q931,11) --
 MSG: CALLPROC
 MSGHDR: 08 01 82 02
 CHANID: 18 01 89

 -- 18:53:04.970() -- N --> T (Q931,11) --
 MSG: ALERTING
 MSGHDR: 08 01 82 01
 CHANID: 18 01 89

 -- 18:53:09.440() -- N --> T (Q931,11) --
 MSG: CONNECT
 MSGHDR: 08 01 82 07

 -- 18:53:09.440() -- T --> N (Q931,11) --
 MSG: CONNACK
 MSGHDR: 08 01 02 0f

 -- 18:53:30.880() -- T --> N (Q931,11) --
 MSG: DISC
 MSGHDR: 08 01 02 45
 CAUSE: 08 02 80 90

 -- 18:53:31.260() -- N --> T (Q931,11) --
 MSG: RELEASE
 MSGHDR: 08 01 82 4d
 CAUSE: 08 02 80 90

 -- 18:53:31.260() -- T --> N (Q931,11) --
 MSG: RELCMPLT
 MSGHDR: 08 01 02 5a
 CAUSE: 08 02 80 90
```



ISDN Messages

This is the overview of the Q.931 messages which are commonly used in a normal ISDN call. For more information on Q.931 messages, see the ITU-T Recommendation Q.931.

- SETUP
  This message is sent by the calling user to the network and by the network to the called user to initiate call establishment.
- CALL PROCEEDING
  This message is sent by the called user to the network or by the network to the calling user to indicate that requested call establishment has been initiated and no more call establishment information will be accepted.
- ALERTING
  This message is sent by the called user to the network and by the network to the calling user, to indicate that called user alerting has been initiated.
- PROGRESS
  This message is sent by the user or the network to indicate the progress of a call in the event of interworking or in relation with the provision of in-band information/patterns.
- CONNECT
  This message is sent by the called user to the network and by the network to the calling user, to indicate call acceptance by the called user.
- DISCONNECT
  This message is sent by the user to request the network to clear an end-to-end connection or is sent by the network to indicate that the end-to-end connection is cleared.
- RELEASE
  This message is sent by the user or the network to indicate that the equipment sending the message has disconnected the channel(if any) and intends to release the channel and the call reference. Thus the receiving equipment should release the channel and prepare to release the call reference after sending a RELEASE COMPLETE.
- RELEASE COMPLETE
  This message is sent by the user or the network to indicate that the equipment sending the message has released the channel(if any) and call reference, the channel is available for reuse, and the receiving equipment shall release the call reference.

Message Direction

This example shows the direction field of the ISDN Q931 Message. When the direction field is displayed 'T → N', it means the ISDN message is transmitted from this Gateway to the ISDN network. On the contrary, when the direction field is displayed as 'N → T' it means that the ISDN message is received from the ISDN network to this Gateway. The following example shows the SETUP message is transmitted from the Gateway to the network side(or ISDN switch) of the ISDN interface.

```
-- 18:53:04.240() -- T --> N (Q931,11) --
 MSG: SETUP
 MSGHDR: 08 01 02 05
 BEARCAP: 04 03 80 90 a3
 CHANID: 18 01 89
 PROGIND: 1e 02 81 88
 CGPTYNMB: 6c 09 00 80 37 30 30 36 30 30 30
 CDPTYNMB: 70 08 80 35 35 35 33 30 30 30
```

Calling party number and Called party number

The following example shows the calling party number(CGPTYNMB) and called party number(CDPTYNMB) on Q931 messages. The purpose of these information elements is to identify the calling party and called party of a call. In this example, The calling party number is 700-6000 and the called party number is 5553000.

```
-- 18:53:04.240() -- T --> N (Q931,11) --
 MSG       : SETUP
 MSGHDR    : 08 01 02 05
 BEARCAP   : 04 03 80 90 a3
 CHANID    : 18 01 89
 PROGIND   : 1e 02 81 88
 CGPTYNMB  : 6c 09 00 80 37 30 30 36 30 30 30
 CDPTYNMB  : 70 08 80 35 35 35 33 30 30 30
```

Progress Indicator

The following example shows the Progress indicator information element. The purpose of the Progress indicator information element is to describe an event which has occurred during the life of a call. In this example,
The progress description value is 8. The meaning of the progress description value is described in the table below.

```
-- 18:53:04.240() -- T --> N (Q931,11) --
 MSG: SETUP
 MSGHDR: 08 01 02 05
 BEARCAP: 04 03 80 90 a3
 CHANID: 18 01 89
 PROGIND: 1e 02 81 88
 CGPTYNMB: 6c 09 00 80 37 30 30 36 30 30 30
 CDPTYNMB: 70 08 80 35 35 35 33 30 30 30
```

Value	Mean
1	Call is not end-to-end ISDN; further call progress information may be available in-band
2	Destination address is non-ISDN
3	Origination address is non-ISDN
4	Call has returned to the ISDN
5	Interworking has occurred and has resulted in a telecommunication service change
8	In-band information or an appropriate pattern is now available
All others	Reserved

ISDN trunk post-dial delay problem (PDD)

This troubleshooting is for an ISDN trunk connection to reduce the Post-dial delay.(primary-euro and basic-euro only)

Symptoms

When a subscriber tries to use an ISDN trunk, it takes few seconds to connect call.

Possible Causes

Some switches in some countries want a Sending Complete information element to be included in the outgoing Setup message to indicate that the entire number is included. If the system does not use the Sending-Complete information element in the Setup message, the peer-system may wait until the expiration of inter-digit timeout to connect the call.

Troubleshooting

1. Check the ISDN interface configuration.

```
Router# show isdn interface pri10

ISDN Information: pri10
-------------------------
caller              -
answer1             -
answer2             -
called-number       -
spid1               -
spid2               -
idle-timeout        5
connect delay       15
keep-alive          10000
disconnect-cause    17
switch-type         primary-euro
side                NET
tei-mode            point-to-point
```

2. If the send-Complete field does not appeared on ISDN information, configure the sending-complete option on ISDN inteface.

```
Router# show isdn interface pri10

ISDN Information: pri10
--------------------------
caller              -
answer1             -
answer2             -
called-number       -
spid1               -
spid2               -
idle-timeout        5
connect delay       15
keep-alive          10000
disconnect-cause    17
switch-type         primary-euro
side                NET
tei-mode            point-to-point
send-Complete       true
```

ISDN incoming call failure

This troubleshooting is for ISDN incoming call failure.

Symptoms

When there is incoming call on ISDN trunk, the call is not connected with subscriber. However, the outgoing call to the ISDN trunk works properly.

Possible Causes

iBG system can receive an ISDN call in En-bloc or Overlap-receiving modes. When configured for overlap-receiving, the setup message does not contain the complete address. The additional messages should be received from the calling side to complete the called address. In En-bloc, the setup message contains all necessary addressing information to route the call. For this reason, when the calling side sends a call with overlap-sending, the iBG system may reject the ISDN incoming call.

Troubleshooting

1. Check the ISDN interface configuration.

```
Router# show isdn interface pri10

ISDN Information: pri10
-------------------------
caller              -
answer1             -
answer2             -
called-number       -
spid1               -
spid2               -
idle-timeout        5
connect delay       15
keep-alive          10000
disconnect-cause    17
switch-type         primary-euro
side                NET
tei-mode            point-to-point
```

2. If the t302 field does not appeared in the ISDN Information, configure the overlap-receiving option in ISDN inteface. The timer t302 is the number of seconds to allow the iBG system to wait for all the digits to be received.

```
Router# show isdn interface pri10

ISDN Information: pri10
--------------------------
caller              -
answer1             -
answer2             -
called-number       -
spid1               -
spid2               -
idle-timeout        5
connect delay       15
keep-alive          10000
disconnect-cause    17
switch-type         primary-euro
side                NET
tei-mode            point-to-point
t302                5
```

ISDN interface down

This is troubleshooting for the ISDN interface for data transport. For voice-port troubleshooting, see ISDN voice-port down.

Symptoms

ISDN interface does not work.

```
Router# show interface bundles
iBG_02# show interface bundles
bundle    bw   contact    encapsulation   stat   IType Link
------   ---   -------    -------------   ----   ----  ----
pri12     1920     -      PPP             Down   PRIE1 1/2:1;
…
```

Possible Causes

- The ISDN cable is not connected properly.
- Network clock does not match with peer system.
- Invalid interface bundle configuration.
- Invalid ISDN bundle configuration.

Troubleshooting

1. Check the ISDN bundle status using the command ‘show isdn status <bundle_name>’. If the Layer 1 Status is not displayed ‘ACTIVE’, check the cable and module.

```
Router# show isdn status pri13
 == USER (1/3) side configuration ==
 Layer 1 Status:
 NOT ACTIVE
 Layer 2 Status:
 NOT ACTIVE TEI MODE POINT-TO-POINT
 Layer 3 Status:
 0 Active Calls
```

2. If the Layer 1 Status is ACTIVE and Layer 2 Status is 'NOT ACTIVE TEI MODE POINT-TO-POINT' or 'NOT ACTIVE TEI MODE MULTIPOINT', check the ISDN configuration.
If the Layer 1 and Layer 2 Status is 'ACTIVE' state, check that the ISDN message flow is working properly. The sample ISDN message below shows the normal message flow of an ISDN call.

```
Router# show isdn status pri13
== NETWORK (1/0) side configuration ==
 Layer 1 Status:
 ACTIVE
 Layer 2 Status:
 NOT ACTIVE TEI MODE POINT-TO-POINT
 Layer 3 Status:
 0 Active Calls
```

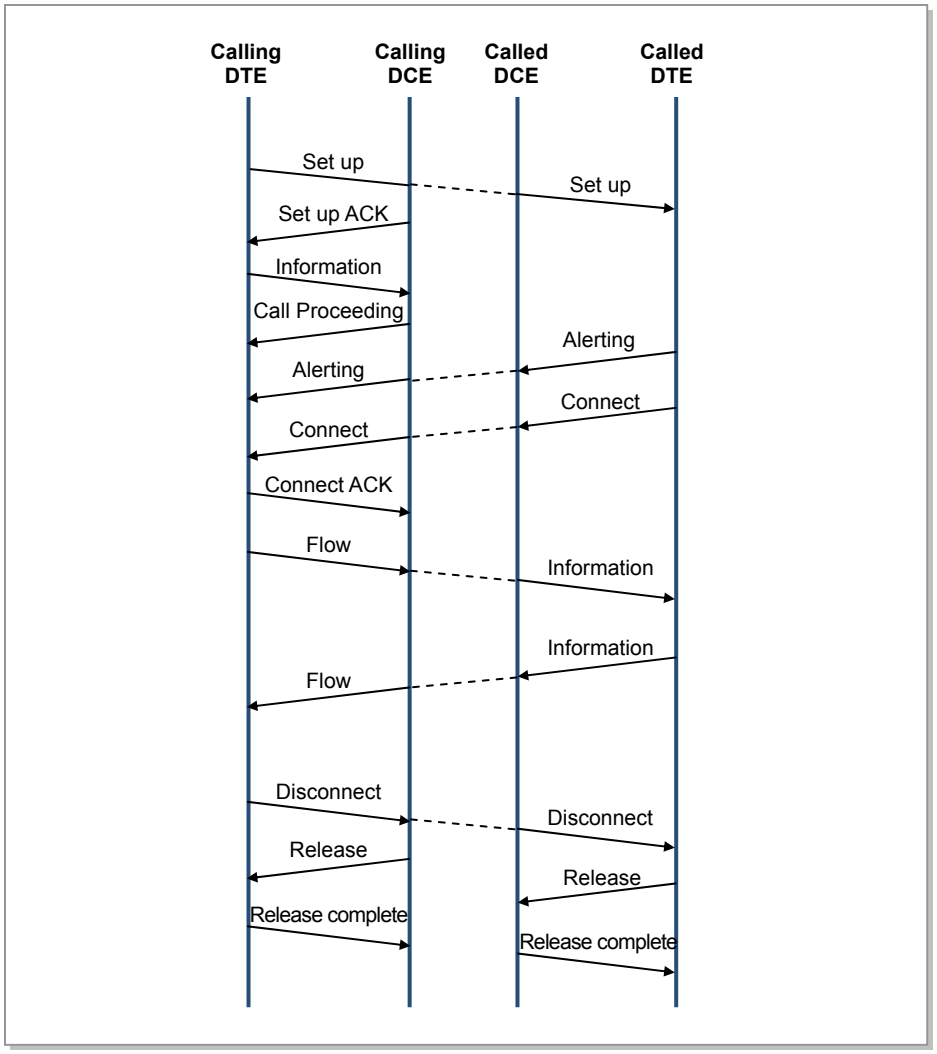
The frequently missing configuration is as follows:

- Did you configure the switch-type to the same as the peer-system?
- Did you configure the ISDN side to the opposite as the peer-system?
- Did you configure the valid tei-mode and tei-value?(BRI only)
- Did you encapsulate the ISDN interface?
- Did you configure the valid ip-address to the ISDN interface?
- Did you configure the valid called-number to the ISDN interface?
- Did you configure the valid network-clock?

3. If the Layer 1 and Layer 2 Status is 'ACTIVE' state, check that the ISDN message flow is working properly. The sample ISDN message below shows the normal message flow of an ISDN call.

```
Router# debug isdn q931 pri001
-- 17:10:13.480() -- T --> N (Q931,10) --
 MSG: SETUP
 MSGHDR: 08 02 00 04 05
 BEARCAP: 04 02 88 90
 CHANID: 18 03 a9 83 82
 CDPTYNMB: 70 08 80 35 35 35 34 30 30 30
```

```
-- 17:10:13.490() -- N --> T (Q931,10) --
MSG: CALLPROC
MSGHDR: 08 02 80 04 02
CHANID: 18 03 a9 83 82

-- 17:10:13.490() -- N --> T (Q931,10) --
MSG: CONNECT
MSGHDR: 08 02 80 04 07

-- 17:10:13.490() -- T --> N (Q931,10) --
MSG: CONNACK
MSGHDR: 08 02 00 04 0f

-- 17:15:07.660() -- N --> T (Q931,10) --
MSG: DISC
MSGHDR: 08 02 80 04 45
CAUSE: 08 02 81 90

-- 17:15:07.660() -- T --> N (Q931,10) --
MSG: RELEASE
MSGHDR: 08 02 00 04 4d
CAUSE: 08 02 81 90

-- 17:15:07.670() -- N --> T (Q931,10) --
MSG: RELCMPLT
MSGHDR: 08 02 80 04 5a
CAUSE: 08 02 82 90
```


Calling DTE
Calling DCE
Called DCE
Called DTE
Set up
Set up
Set up ACK
Information
Call Proceeding
Alerting
Alerting
Connect
Connect
Connect ACK
Flow
Information
Information
Flow
Disconnect
Disconnect
Release
Release
Release complete
Release complete

ISDN Messages

This is an overview of the Q.931 messages which are commonly used in a normal ISDN call. For more information on Q.931 messages, see the ITU-T Recommendation Q.931.

- SETUP
  This message is sent by the calling user to the network and by the network to the called user to initiate call establishment.
- CALL PROCEEDING
  This message is sent by the called user to the network or by the network to the calling user to indicate that the requested call establishment has been initiated and no more call establishment information will be accepted.
- ALERTING
  This message is sent by the called user to the network and by the network to the calling user, to indicate that called user alerting has been initiated.
- PROGRESS
  This message is sent by the user or the network to indicate the progress of a call in the event of interworking or in relation with the provision of in-band information/patterns.
- CONNECT
  This message is sent by the called user to the network and by the network to the calling user, to indicate call acceptance by the called user.
- DISCONNECT
  This message is sent by the user to request the network to clear an end-to-end connection or is sent by the network to indicate that the end-to-end connection is cleared.
- RELEASE
  This message is sent by the user or the network to indicate that the equipment sending the message has disconnected the channel(if any) and intends to release the channel and the call reference. Thus the receiving equipment should release the channel and prepare to release the call reference after sending a RELEASE COMPLETE.
- RELEASE COMPLETE
  This message is sent by the user or the network to indicate that the equipment sending the message has released the channel(if any) and call reference, the channel is available for reuse, and the receiving equipment shall release the call reference.

Message Direction

This example shows the direction field of the ISDN Q931 Message. When the direction field is displayed 'T → N', it means the ISDN message is transmitted from this Gateway to the ISDN network. On the contrary, if the direction field is displayed 'N → T' it means that the ISDN message is received from the ISDN network to this Gateway. Following example shows the SETUP message is transmitted from the Gateway to the network side(or ISDN switch) of the ISDN interface.

```
-- 18:53:04.240() -- T --> N (Q931,11) --
 MSG: SETUP
 MSGHDR: 08 01 02 05
 BEARCAP: 04 03 80 90 a3
 CHANID: 18 01 89
 PROGIND: 1e 02 81 88
 CGPTYNMB: 6c 09 00 80 37 30 30 36 30 30 30
 CDPTYNMB: 70 08 80 35 35 35 33 30 30 30
```

Calling party number and Called party number

The following example shows the calling party number(CGPTYNMB) and called party number(CDPTYNMB) on Q931 messages. The purpose of the these information elements is to identify the calling party and called party of a call. In this example, The calling party number is 700-6000 and the called party number is 5553000.

```
-- 18:53:04.240() -- T --> N (Q931,11) --
 MSG: SETUP
 MSGHDR: 08 01 02 05
 BEARCAP: 04 03 80 90 a3
 CHANID: 18 01 89
 PROGIND: 1e 02 81 88
 CGPTYNMB: 6c 09 00 80 37 30 30 36 30 30 30
 CDPTYNMB: 70 08 80 35 35 35 33 30 30 30
```

Progress Indicator

The following example shows the Progress indicator information element. The purpose of the Progress indicator information element is to describe an event which has occurred during the life of a call. In this example,
The progress description value is 8. The meaning of the progress description value is described in the table below.

```
-- 18:53:04.240() -- T --> N (Q931,11) --
 MSG: SETUP
 MSGHDR: 08 01 02 05
 BEARCAP: 04 03 80 90 a3
 CHANID: 18 01 89
 PROGIND: 1e 02 81 88
 CGPTYNMB: 6c 09 00 80 37 30 30 36 30 30 30
 CDPTYNMB: 70 08 80 35 35 35 33 30 30 30
```

Value	Mean
1	Call is not end-to-end ISDN; further call progress information may be available in-band
2	Destination address is non-ISDN
3	Origination address is non-ISDN
4	Call has returned to the ISDN
5	Interworking has occurred and has resulted in a telecommunication service change
8	In-band information or an appropriate pattern is now available
All others	Reserved

No Busy Tone and No Annoucement Message on ISDN-SIP/H.323

Symptoms

Through the Ubigate system's VOIP Call connection, call progress in-band related issues when interworking ISDN and SIP/H.323 signalling between the VOIP and Public Switched Telephone Network(PSTN).

- The indication of in-band tones and announcements is controlled by the Progress Indicator(PI) information element(IE) in ISDN.
- The PI signals those interworking situations where in-band tones and announcements must be used.
- In the context of this document, these are the ITU Q.931 PI values of interest:
  - PI = 1, Call is not end-end ISDN. Further call progress information might be available in-band.
  - PI = 2, Destination address is non-ISDN.
    PI = 3, Origination address is non-ISDN.
    PI = 8, In-band information or an appropriate pattern is now available.
- The call terminating Ubigate cuts through the audio path in the backward direction to transmit in-band information when the terminating ISDN switch sends these messages
  Disconnect message with PI = 8

Possible Causes

- No dial-peer configuration 'auto-alert'
- ISDN switch does not sending disconnect message with PI=8.

Troubleshooting

Check the dial-peer configuration.
With CLI ‘show dial-peer voice num 111’ command, it’s possible to check the current config.

```
U1_0 # show dial-peer voice num 111
VoiceEncapPeer111
       <<< Dial Peer Common Info >>>
       id = 111, type = pots,
       description = ``,
       admin state = 'up', operation state = 'up',
       destination-pattern = `111`, answer-address = ``,
       preference = 0, numbering type = 'none',
       incoming called-number = ``, connections/maximum = 0/
       unlimited,
       decision limit number = '3',
       huntstop = `disabled`,
       incoming COR list = `maximum capability`,
       outgoing COR list = `minimum requirement`,
       called translation ruleset id = `0`,
       calling translation ruleset id = `0`,
       incoming translation profile = `none`,
       outgoing translation profile = `none`,
       CLID restrict = 'disabled', CLID remove = 'disabled',
       CLID remove name = 'disabled',
       CLID network number = '', CLID override RDNIS =
       'disabled',
       call block translation-profile = '',
       call block disconnect-cause = 'No Service',

       <<< Dial Peer POTS Info >>>
       prefix = '',
       forward digits = 'default',
       direct-inward-dial = 'enabled',
       digit strip = 'enabled',
       port = '0/0/0:D',
       authentification name = '', passwd = '',
       sip registration = 'disable',
       trunk group = '0 trunk group is registered'
       smime = 'disable',
       call waiting = 'disabled', call pickup group id = ''
       auto-alert = '1',
```

```
        progress-ind:
               alert = '0', call proceed = '0', connect = '0',
               disconnect = '0', progress = '0',
               setup = '0', setup ack = '0',
        progress-ind-locate = 'disable',

        <<< Dial Peer Statistics Info >>>
        Connect Time = 0 seconds,
        In Calls = 0, Out Calls = 0
        In Ans Num = 0, Out Ans Num = 0
        In Fail Num = 0, Out Fail Num = 0
        In Abnormal Term Num = 0, Out Abnormal Term Num = 0
        In Abandon Num = 0, Out Abandon Num = 0
        Last Disconnect Cause is 'CS_UNDEFINED_CAUSE',
        Last Setup Time = --.
```

Call connecting Failure I

This failure can occur when the configuration of the POTS dial-peer is wrong.

Symptoms

User is not able to establish a voice call.

Possible Causes

- Destination-pattern in the dial-peer and the called number does not match.
- The status of the port in the dial-peer is down.

Troubleshooting

1. If you are having trouble establishing a call, you can try to resolve the problem by performing the following tasks.

2. If you suspect the problem is associated with the dial-peer configuration, use the 'show dial-peer voice' command on the local and remote concentrators to verify that the data is configured correctly on both.

3. Check the inbound dial-peer and the outbound dial-peer on call-log. If you want to show the call-log, use the 'debug call-log' command.

```
Router# debug console
Router# debug call-log all
02:45:54.940()::Call-Log Start
02:45:54.940()::In  Dial-Peer=7000  Description=
TS#(322)PORT:0/1/1
02:45:54.940()::Out Dial-Peer=6000  Description=
TS#(323)PORT:0/1/0
02:45:54.940()::Receive CalledNumber=6000
CallingNumber=7000 CallerName=
02:45:54.940()::Forward CalledNumber=
CallingNumber=7000
02:45:54.940()::Account_Sess=22 SystemId=TOP57
CallingPartyCategory=1 CallId=22
02:45:54.940()::Time Attempt =03/29/2000-02:45:48-690
```

```
02:45:54.940()::    Setup   =03/29/2000-02:45:52-620
02:45:54.940()::    Alert   =03/29/2000-02:45:52-620
02:45:54.940()::    Answer  =--
02:45:54.940()::    Disconn =03/29/2000-02:45:54-940
02:45:54.940()::Q850_Cause=16:CS_NORMAL_RELEASE
SipStatusCode=SC_200_Ok
02:45:54.940()::causeType_failCode causeLoc1_cgUser
causeLoc2_oBcc
02:45:54.940()::CCA(13/1)CTX(22)DSP#(21)TS#(322)PORT:0/1/1::
Disc Event(DM_nfHon)HOOK(0)from(PIC_O_Alerting)
02:45:54.940()::PacketUsage:Sent=0 Recv=0 jitterDelay=0
Lost=0
02:45:54.940()::Call-Log End
```

4. Toggle the voice port and/or serial port by entering ‘shutdown’, and then ‘no shutdown’ CLI commands.

Call connecting Failure II

This failure can occur when the configuration in the VoIP dial-peer is wrong.

Symptoms

User is not able to establish a voice call..

Possible Causes

- Destination-pattern in dial-peer and called number does not match.
- There is no session target in the VoIP dial-peer.
- Session protocol of the local and remote concentrator does not match.

Troubleshooting

1. If you are having trouble connecting a call, you can try to resolve the problem by performing the following tasks:

2. If you suspect the problem is associated with the dial-peer configuration, use the ‘show dial-peer voice’ command on the local and remote concentrators to verify that the data is configured correctly on both.

3. Check the out state of the dial-peer. If you want to show the out state of the dial-peer, use the ‘show dial-peer voice summary’ command.

```
Router# show dial-peer voice summary
ID TYPE PREFIX DEST-PATTERN PREF SESS-TARGET  PORT ADMIN
OPER OUT-STAT
6  VOIP (null) 6.T    0     ipv4:172.19.30.5   up  up  up
7  POTS        7.T    0         1/3:D          up  up  up
8  POTS        8      0         0/0/0          up  up  up
9  POTS        9      0         0/0/1          up  up  up
6000 POTS   6000      0         0/1/0          up  up  up
7000 POTS   7000      0         0/1/1          up  up  up
```

Call connecting Failure III

This failure occurs when the access-group configuration is wrong.

Symptoms

User is not able to establish a voice call..

Possible Causes

When the access group is configured, you are having trouble connecting a call.

Troubleshooting

1. If the VoIP call fails, you can try to resolve the problem by performing the following tasks:

2. Use the ‘show voice access group all’ command.

3. Check the IP address in the access group.

```
Router/configure/voice/access-group agg1# show voice access-
group all

       Access Group: agg1
              Description:

              Access List: 0
                     PERMIT: ipv4:172.19.30.20 host
                     PERMIT: ipv4:1.1.1.0
                     DENY: ipv4:1.1.1.1
```

TLS connection fault

Symptoms

Through the Ubigate system's SIP Call connection, TLS connection was not established.

Possible Causes

- The physical line(Ethernet/wan..) does not connect between Ubigate and SIP peer/call server.
- SIP-peer/call server does not support TLS connection.
- SIP-peer/call server does not support TLS Cipher Suite, Ubigate could support Cipher Suite below.
  - TLS_Cipher_TLS_RSA_WITH_3DES_EDE_CBC_SHA
  - TLS_Cipher_TLS_RSA_WITH_AES_128_CBC_SHA
- When SIP-Peer/call server could not verified certificate.

Troubleshooting

1. Check that the port line is inserted correctly.
   Physical RJ45 Cable must be connected to Ubigate system's physical port.
   Check port's LED status.

2. Check the system configuration call server/dial-peer/gloal voice service.
   With the CLI 'show voip gateway', 'show run' command, it's possible check current config.

```
Ubigate/configure# show voip gateway
VoIP Gateway Status
Gateway Status: Call-server SES Survivable mode
  Call-server: ipv4:172.1.1.20 TLS

Gateway IP address
  Binding status: ethernet 0/2, ethernet 0/2
  Control IP address: ipv4:172.1.1.66
  Media IP address: ipv4:172.1.1.66
Default domain name: samsungen.com
```

```
VoIP Protocol status
  VoIP service: ENABLED
  SIP service: ENABLED

VoIP Media configuration
  QoS Media: ef
  QoS Signal: ef
  RTP Start Port: 16384, Range: 512
  RTCP Interval: 5 (1-10)

Home Server information
  SIP server: 172.1.1.20
  Domain name: samsungen.com
  UDP port: 5060
  TCP port: 5060
  TLS port: 5061
```

3. Check the call connection type.
With the CLI ‘show sip-ua connections’ command, the connection status could be checked.

Digit Manipulation Failure

This failure can occur when the configuration related to digit manipulation is wrong. Examples are translation rule configuration and number expansion configuration.

Symptoms

Called number or Calling number is changed to a wrong number.

Possible Causes

- Incorrect configuration related to digit manipulation.
- Incorrect translation rule configuration.
- Incorrect number expansion configuration.

Troubleshooting

1. If you suspect the problem is associated with the translation rule configuration, check and test voice translation rule command.

2. show voice translation-rule number.

3. test voice translation-rule number input-test-string [type match-type [plan match-type]]

```
Router/configure# show voice translation-rule all
Translation-rule set id: 1
    Rule 0:
    Rule type: match & replace
    Match pattern: /^33/
    Replace pattern: //
    Match type: none            Replace type: none
    Match plan: none            Replace plan: none

Router/configure# test voice translation-rule 1 332795000
```

```
    Matched with Rule 1
    Original Number: 332795000
    Translated Number: 2795000
   Original Number Type: none   Translated Number Type: none
   Original Number Plan: none   Translated Number Plan: none
```

4. If you suspect the problem is associated with number expansion configuration, use the show num-exp command.

5. show num-exp <dialed-number>

```
Router/configure# show num-exp 6000

      <<< NUMBER EXPANSION INFO >>>
 Dest Digit Pattern = '6000'    Translation = '2796000'
```

Input the character '?' in the Destination-Pattern of Dial-Peer

This shows how to input the character '?' in the dial-peer destination-pattern.

Symptoms

When an administrator inputs the character '?' in the dial-peer destination-pattern, Ubigate shows this help message.

```
Router/configure/dial-peer/voice/pots 3# destination-pattern
3...?
  <WORD>            A sequence of digits - representing the
                    prefix or full telephone number
```

Possible Causes

The character '?' in the CLI command generally means that an administrator wants to see the help message.

Troubleshooting

Use the 'Ctrl' key and 'v' key on the keyboard(Ctrl + v). If you input the character '?' after the(Ctrl + v) key combination, you can input the character '?' in the destination pattern of the dial-peer.

E1 R2 connection

When Installing the iBG System, E1 R2 Digital Trunk Line will be connected to PBX E1 R2.

Symptoms

Through the iBG system's E1 R2 Digital Trunk, Call connection is not established.

Possible Causes

- The physical line does not connect between iBG system and PBX E1 R2.
- E1 R2 Signal Configuration is not match with PBX E1 R2.
- E1 R2 Digital Trunk's Dial-peer does not exist.

Troubleshooting

1. Check that the port line is inserted correctly.
   Physical RJ45 Cable must be connected to iBG system's E1-R2 physical port. Check port's LED status.

2. Check TE1 module's configuration.
   With the CLI 'show module configuration all' command, it's possible to check the module's current status. if display with T1, have to change to E1 and Reboot System.

3. Check the E1-R2 Port's Configuration.
   With CLI 'show voice port [slot/subslot/port:ds0-group]', the port's configuration status will be checked. E1-R2 Signaling Type can be configured to mfc/dtmf. It must be matched to connected to the PBX E1 R2 Trunk's Signaling Type. If the opposite side's configuration is not known, change Type and check the voice port's status with CLI 'show voice port summary'. the port state is idle then the connection is established.

4. Check the Digital Trunk's Dial-peer.
   With CLI 'show dial-peer voice summary', check that the voice port's dial peer exists.

E1 R2 CAS Custom

When Installing iBG System's E1-R2 Digital Trunk it is configured to E1-R2 mfc/dtmf. The CAS custom configuration must match.

Symptoms

Though the iBG system's E1-R2 Digital Trunk is established to PBX's E1-R2, call connection is not established.

Possible Causes

E1-R2 mfc/dtmf CAS custom configuration is different from PBX's.

Troubleshooting

1. Check the configurations of the port's CAS custom.
   With CLI 'show voice port [slot/subslot/port:ds0-group]', the current CAS custom configuration is displayed. Check cas-custom country/answer signal group/answer signal configuration with the connected PBX's configuration.

2. Check CAS Custom country.
   iBG system and PBX's CAS Custom configuration must match.
   If they do not match, the call connection will be not established.
   After changing the country configuration, the user must set CLI input to E1-R2 voice port with 'no shutdown'. The cas custom country default value will be applied.

T1 CAS connection

When Installing the iBG System, T1 CAS Digital Trunk Line will be connected to PBX T1.

Symptoms

Through the iBG system's T1 CAS Digital Trunk, Call connection is not established.

Possible Causes

- The physical line does not connect iBG system and PBX T1 CAS.
- T1 CAS Signal Configuration does not match PBX T1.
- T1 CAS Digital Trunk's Dial-peer does not exist.

Troubleshooting

1. Check that the port line is inserted correctly.
   The physical RJ45 Cable must be connected to iBG system's T1 CAS physical port. And checking port's LED status.

2. Check TE1 module's configuration.
   With CLI 'show module configuration all' command, it's possible check the module's current status. if display with E1, have to change to T1 and Reboot System.

3. Check T1 CAS Port's Configuration.
   With CLI 'show voice port [slot/subslot/port:ds0-group]', the port's configuration status will be checked. T1 CAS Signaling Type can be configured to variable. e & m wink start/e & m immediate start/e & m delayed start/FXS loop start/FXS ground start/FXO loop start/FXO ground start/R1 signal type.

It must match the connected PBX T1 CAS Trunk's Signaling Type. If the opposite side's configuration is not known, then change the Type and check the voice port's status with CLI 'show voice port summary'. Port state is idle then the connection is established.

4. Check Digital Trunk's Dial-peer.
With CLI 'show dial-peer voice summary', check that the voice port's dial peer exists.

E1/T1 Clock Synchronization

When Installing the iBG System, the E1/T1 CAS Digital Trunk must synchronize to PBX.

Symptoms

In the E1/T1 Digital trunk, Signal LOS Alarm is raised.

Possible Causes

Between the iBG system and PBX, clock synchronization does not match.

Troubleshooting

Check the clock configuration.
With CLI ‘show network-clocks’, check that the system’s clock is stable.
Check that the clock source is configured from the E1/T1 port. If it is not, configure with CLI ‘ntclk-select t1/e1 [priority/slot/subslot/port]’

DSP fail fault

This fault occurs when there is an error in the process of initializing the DSP card, it might occur at the initiation of the system. When a fault occurs the system cannot be used as the voice gateway. When the Ubigate iBG system fails to initialize the DSP chipset, you must reboot the system.

Symptoms

In the Ubigate iBG system, the following event has occurred.

```
#Feb 09 12:00:47 emergency    EVENT     DSP module
initialization fails  RAISE
```

Possible Causes

The Ubigate iBG system fails to initialize the DSP chipset.

Troubleshooting

Reboot the Ubigate iBG system after replacing DSP chipset from slot 0 MPU_A to another one.

DSP No response

If you experience some of the audio problems, you may see DSP timeout messages on the console or in the router log such as below.

Symptoms

On the Ubigate iBG system, following event will be occurred.

```
TIMEOUT: Request on Conn 6 MSPChnl 2
Error!!! No response was obtained from MSP (Timeout occured)
in VCORE_CheckStatus()
```

Possible Causes

DSP module fails to work properly.

Troubleshooting

Reboot Ubigate iBG system.

DSP packet loss

If you experience some of the Fax transmission problems, you have to check if VoIP or FoIP packets are dropped by DSP module.

Symptoms

On the Ubigate iBG system, you can check whether packets are dropped by DSP module with the following CLI command.
If the value of LS field is increasing, you come to conclusion that DSP module is abnormal state now.

```
# show voice dsp pkt
-------------------------------------------------
     TX-PKT          RX-PKT              RX-PKT
CH#   VCE/ SIG/ CNO  VCE/ SIG/ CNO/TOCT  LS/ OS/ LT
===   ============== ================== ==========
```

Possible Causes

DSP module may be damaged by overheating or other reasons.

Troubleshooting

Replace the DSP module with the new one.

DSP voice quality tunning

This is for reducing the echo problem when a VoIP subscriber make a call through the digital trunk.

Symptoms

When a VoIP subscriber make a call through the digital trunk, he may hear an echo or voice chopping.

Possible Causes

- DSP is not configured for Echo Canceller to work properly.
- The network clock of the Ubigate iBG system is selected by mistake.

Troubleshooting

1. Check the configuration of the Echo canceller(EC) first. The Normal configurations of the system for EC are EC On and NLP(Non Linear Processor) On, NLP option 0, EC gain value 0.

2. After checking the configuration of the system, if the problems exist as ever, check the network clock source of the digital trunk which affects the digitalized voice data quality. The clock source of the system must be selected with the clock of the trunk used for voice path as primary.

3. If the problems don't disappear, check the voice quality. If chopping of voice from the remote side is severe, set the value of the NLP option as 1. If the voice volume where the echo is included is relatively loud, set the value of EC gain as -1~-5.

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Ubigate iBG series

TroubleShooting Manual

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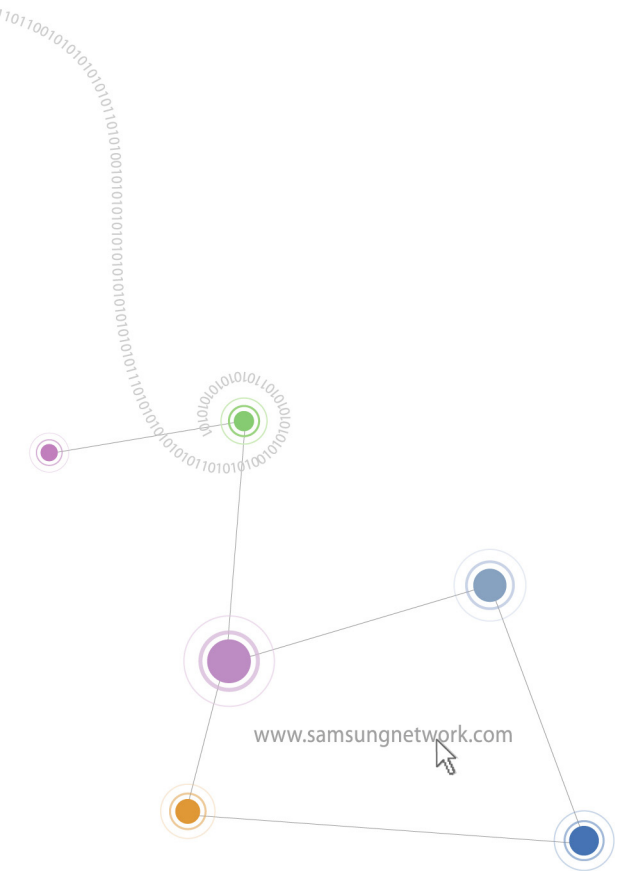
Ubigate iBG series
TroubleShooting Manual



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