

REIN & SHINE

Understanding and avoiding Electrical Interference

Introduction

In the course of troubleshooting a fault on your broadband service you may have been told by Cerberus or BT that your problem is being caused by electrical interference or environmental noise. This comes in 2 forms. REIN and SHINE. If it's the first time you have come across these terms you would be forgiven for thinking that they are meteorological terms with no bearing on your Internet connection. These are not Cerberus acronyms, but rather industry standard terms to describe types of electrical interference.

Here's what you need to know:

REIN

REIN stands for Repetitive Electrical Impulse Noise and is generated throughout the operation of an electrical device. It will usually result in errors and disconnections as long as the device causing the noise is powered on. This can mean slow speeds as well as instability. It can even prevent the connection from being established in the first place.

SHINE

SHINE is not quite an acronym. The term is used to refer to Single Isolated Impulse Noise. SHINE is different from REIN as SHINE is generated as a burst, usually when a device is turned on or off. So you can have a connection that works fine most of the time, but then drops when something powers up or down.

Effects

Both REIN and SHINE will cause problems with your broadband service and can often be difficult to isolate. As the effects can be intermittent, they can often make it very hard to troubleshoot the fault because they may not be present during testing, only to return later.

In both, the electrical interference given off is in the range of frequencies used by your broadband. Think about the noise you hear when a mobile phone is close to a radio or amplifier and is about to ring or in a call, you find that the subject matter is interrupted by loud pops and clicks. Imagine the same thing happening to the high speed digital data stream of your broadband.

As well as causing instability and slow speeds due to errors. You can also find that your line remains slow even when the interference stops. This is because BT use a system called Dynamic Line Management. Dynamic Line Management monitors and adjusts the profile of your line to give you the best speeds and stability. However REIN and SHINE confuse DLM and it will often keep lowering the speed in an attempt to make the line stable.

Causes

In both cases it is usually a faulty power source, or other machinery, that is causing the interference. Here are some examples of possible causes. This list is not exhaustive. Nor does it mean that items below will necessarily cause trouble. It is *usually* faulty equipment only that causes these problems.

- Christmas tree or other low voltage lights, especially in flash mode. Beware especially cheap lights bought on the internet that may not have been subjected to EU tests
- Power Adaptors
- Air conditioning Condensers or Central Heating
- Credit Card Terminals (sometimes known as PDQ machines).
- Street or Security Lighting
- Power cables close to the telephony wiring
- Roadworks, especially temporary traffic lights using microwaves to communicate with each other
- Timed Devices and switches
- Electrical Appliances, especially things like satellite TV boxes which are often connected to the phone line

Solutions

The best solution is to find the source of the interference and eliminate it. However there are measures that you can take to make your setup more resilient.

Usually the source is within your premises. Think about devices that fit into the categories above and try switching them off one by one to see if the problem is resolved. If your service is slow but stable remember that you may have DLM active on your line in which case you should contact Cerberus to have your profile reset.

Alternatively you can use an AM (also known as Medium Wave) radio to help you find the source of the interference. Tune the radio to a medium wave frequency of 612Khz. You should hear static. Move the radio towards any suspicious devices, if you hear a distinctive buzz or hum that gets louder as the radio gets closer it is very likely that you have found the cause.

When switching off a possible source remember that it may well be the power supply at fault, so simply switching the device itself off may not suffice. To be sure you should switch off the power at the wall.

Please note that some equipment may cause a small amount of noise on the radio when very close. This is not a problem. Problematic devices will generate noise at a distance of a few feet or even metres away.

At sites that are suffering REIN or SHINE it is especially important to follow good practice with respect to filters, faceplates and wiring. If you have not followed the advice below we recommend you do so before escalating a fault. You may solve your problem.

- If possible, connect your modem at the Master Socket rather than an extension.
- If possible use a faceplate on the master socket rather than plug in filters. Older houses may have extension wiring that still has the obsolete bell-wire hooked up. This wiring acts like an antenna for noise. A faceplate disconnects this wiring, filters your extension wiring centrally, and the new Mark 3 Openreach faceplates also have an RF filter specifically designed to help reduce the effects of REIN.
- If you cannot use a faceplate then make certain that everything connected to the same phone line as your broadband has a microfilter connected between it and the phone socket.
- Keep extension wiring as short as possible.

BT, Charges & External Sources of Noise

Resolving REIN/SHINE issues can be complicated, and customers often ask us whether we can send out a BT engineer to troubleshoot. On request BT can send out specially trained REIN engineers, however it is important to note that REIN faults are usually considered *environmental* and **not** a fault with the BT network. As such, BT will charge the full rate for engineering visits related to REIN and Cerberus will pass on these charges. BT will charge even if they do not manage to find the source of the Interference. This is BT policy and not something that Cerberus have any control over.

We strongly recommend that you troubleshoot REIN issues within your property yourself. If you think that the source is external to the property then it is advisable to talk to your neighbours as they may be having trouble too.

Often, it can be frustrating to deal with a fault caused by REIN or SHINE. Cerberus will support you in doing this but what we can do is usually limited to providing advice. Because BT do not take responsibility for these issues, our general advice is to approach any problem that is, or might be caused by REIN or SHINE with as much patience and diligence as possible, following the guidance above step by step until you find the root cause of the problem.