To set up a controlled network experiment on a Linux system using tc (Traffic Control) and netem (Network Emulator) modules, we need to specify rules for traffic behavior that will allow you to study the effects of various network conditions. Below are the detailed commands for setting up controls for delay, packet loss, and bandwidth rate limits as specified in your requirements.

1. Control Delay:

You can control the delay per packet and add jitter, along with specifying a distribution for the delay.

```
tc qdisc add dev [interface] root netem delay [mean] [deviation] distribution [distribution-type]
```

Example:

Set a delay of 100ms with 10ms of jitter, using a normal distribution

```
tc qdisc add dev eth0 root netem delay 100ms 10ms distribution normal
```

2. Control Packet Loss Rate:

This allows you to emulate packet loss in the network, which is useful for understanding how lossy networks affect application performance.

```
tc qdisc add dev [interface] root netem loss [percentage]
```

Example:

Set a packet loss rate of 1%

```
tc qdisc add dev eth0 root netem loss 1%
```

3. Control Bandwidth (Rate Limiting):

This is used to limit the bandwidth to a specified maximum, ensuring that your network conditions are controlled strictly below a certain rate.

```
tc qdisc add dev [interface] root tbf rate [rate] burst [burst-size] latency [latency]
```

Example:

Limit the bandwidth to 100kbps with a burst size of 1600 bytes and 50ms latency

```
tc qdisc add dev eth0 root tbf rate 100kbps burst 1600 latency 50ms
```