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pNFS Test Suite

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pNFS Test Suite

Outline

- Packet trace module
- Test utilities module
- NFS Proxy enhancements
- Demo



pNFS Test Suite

Packet trace module

- Why?



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Packet trace module

- Why?
- What?



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Packet trace module

- Why?
- What?
- How?



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Packet trace module

```
from pktt import Pktt

x = Pktt("/traces/tracefile.cap")

# Iterate over all packets in the trace file
for pkt in x:
    print pkt
```



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Packet trace module

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x.next()
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x.rewind([index])
```




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x = Pktt("/traces/tracefile.cap")

# Iterate over all packets in the trace file
for pkt in x:
    print pkt

x.next()

x.rewind([index])

x.match(match_str [, maxindex])
```



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Packet trace module

```
x.match(match_str [, maxindex])
```

Examples:

```
# Find the packet with both the ACK and SYN TCP flags  
# set to 1  
pkt = x.match("TCP.flags.ACK == 1 and TCP.flags.SYN == 1")
```

```
# Find the next NFS EXCHANGE_ID request  
pkt = x.match("NFS.argop == 42")
```

```
# Find the next NFS OPEN request or reply  
pkt = x.match("NFS.op == 18")
```



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Packet trace module

Examples:

```
# Find all packets coming from subnet 192.168.1.0/24 using
# a regular expression
while x.match(r"IP.src == re('192\.168\.1\.\d*')"):
    print x.pkt
```

```
# Find GETATTR asking for FATTR4_FS_LAYOUT_TYPE(bit 62)
call = x.match("NFS.attr_request & 0x4000000000000000L != 0")
if call:
    # Find GETATTR reply
    xid = call.rpc.xid
    # Find reply where the number 62 is in the array
    # NFS.obj_attributes
    reply = x.match("RPC.xid == %d and 62 in
NFS.obj_attributes" % xid)
```



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Packet trace module

Examples:

```
# Find the next WRITE request
pkt = x.match("NFS.argop == 38")
if pkt:
    print pkt.nfs
```

```
# Same as above, but using membership test operator instead
if ("NFS.argop == 38" in x):
    print x.pkt.nfs
```



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Test utilities module

- Process command line arguments
- Provide functionality for PASS/FAIL
- Provide multiple client support
- Logging mechanism
- Debug info control
- Mount/Unmount control
- Create files/directories
- Provide mechanism to start a packet trace
- Provide mechanism to change the behavior of pyNFS
- Provide mechanism to control the NFS proxy
- Support for pNFS testing



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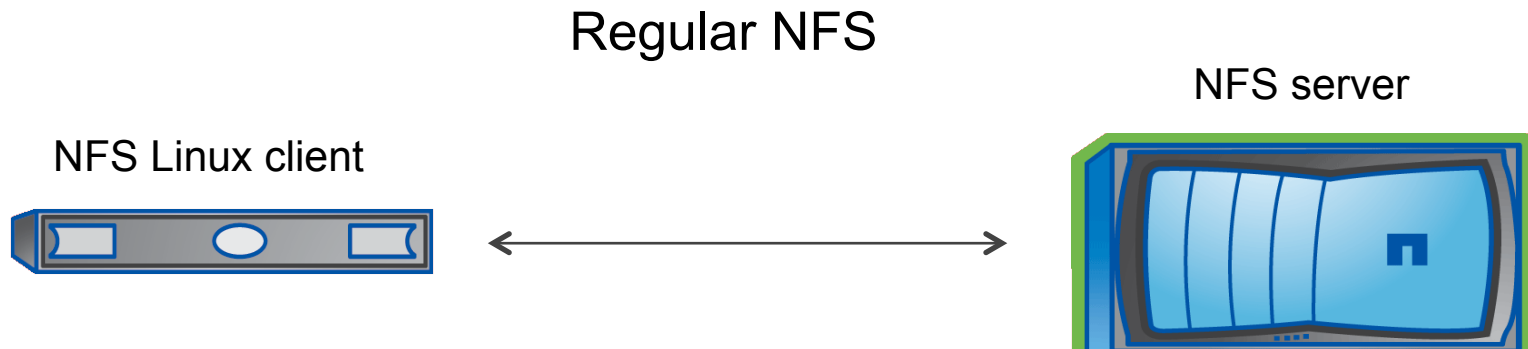
NFS Proxy enhancements

- Control proxy through RPC (procedure N)
- Added error injection mechanism
- Added packet delay (call or reply) mechanism
- Added a mechanism to disable/enable enum checking
- Added a mechanism to change packet data



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NFS Proxy enhancements

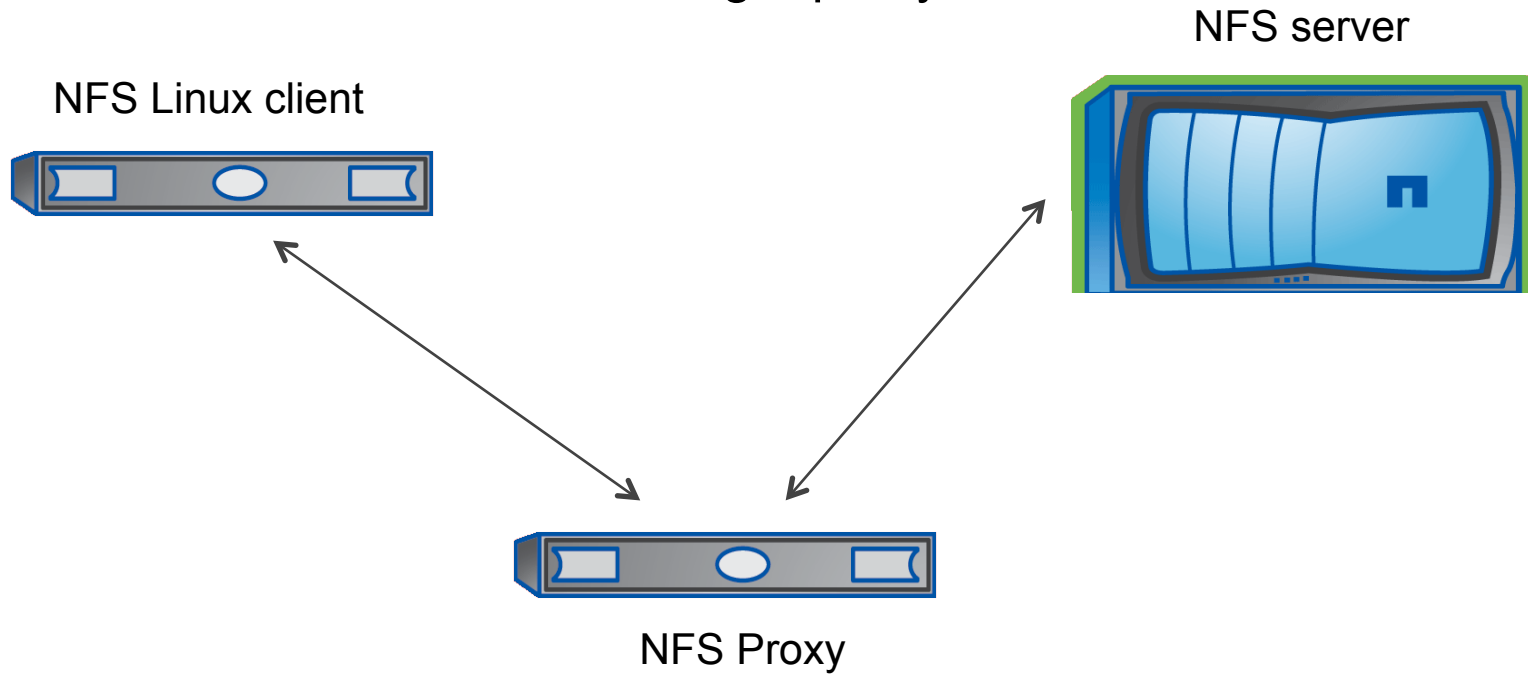




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NFS Proxy enhancements

NFS using a proxy

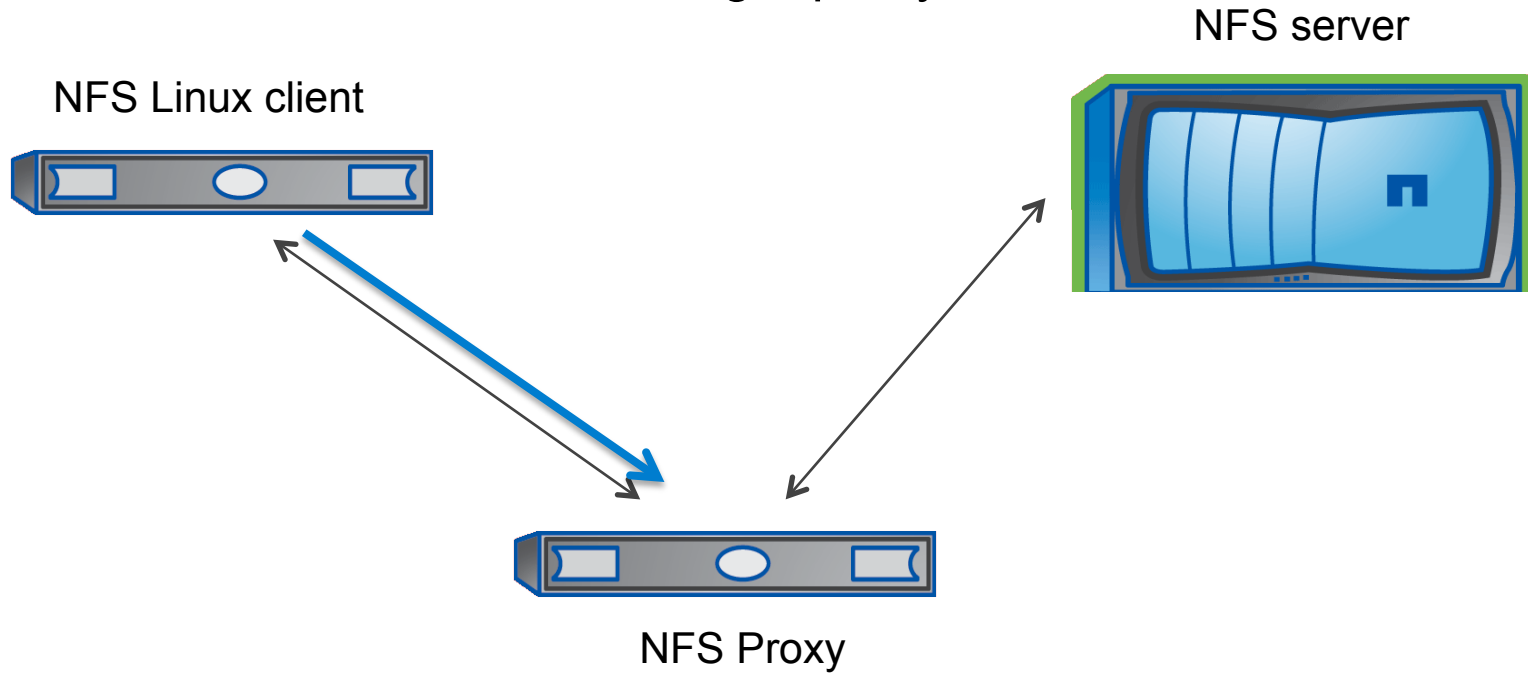




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NFS Proxy enhancements

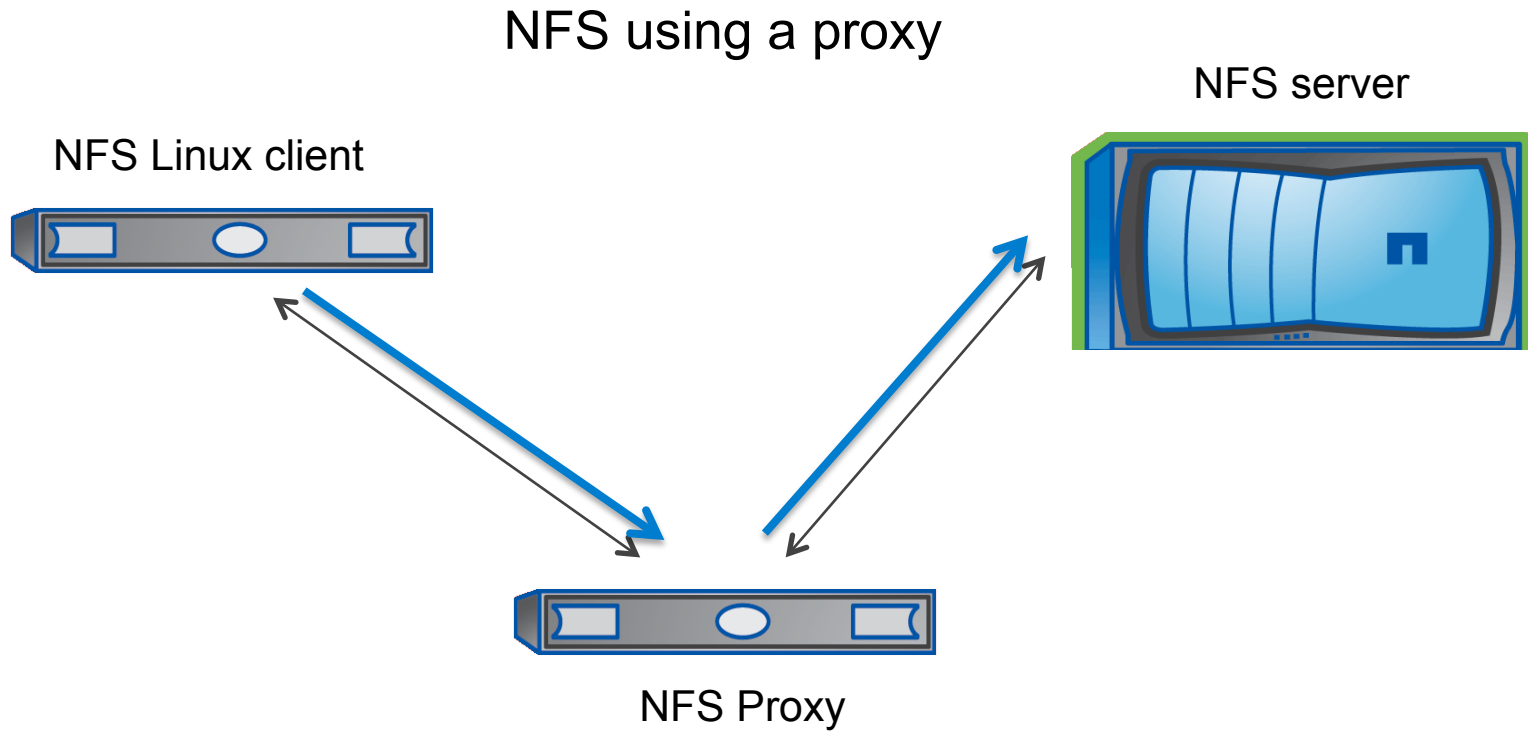
NFS using a proxy





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NFS Proxy enhancements

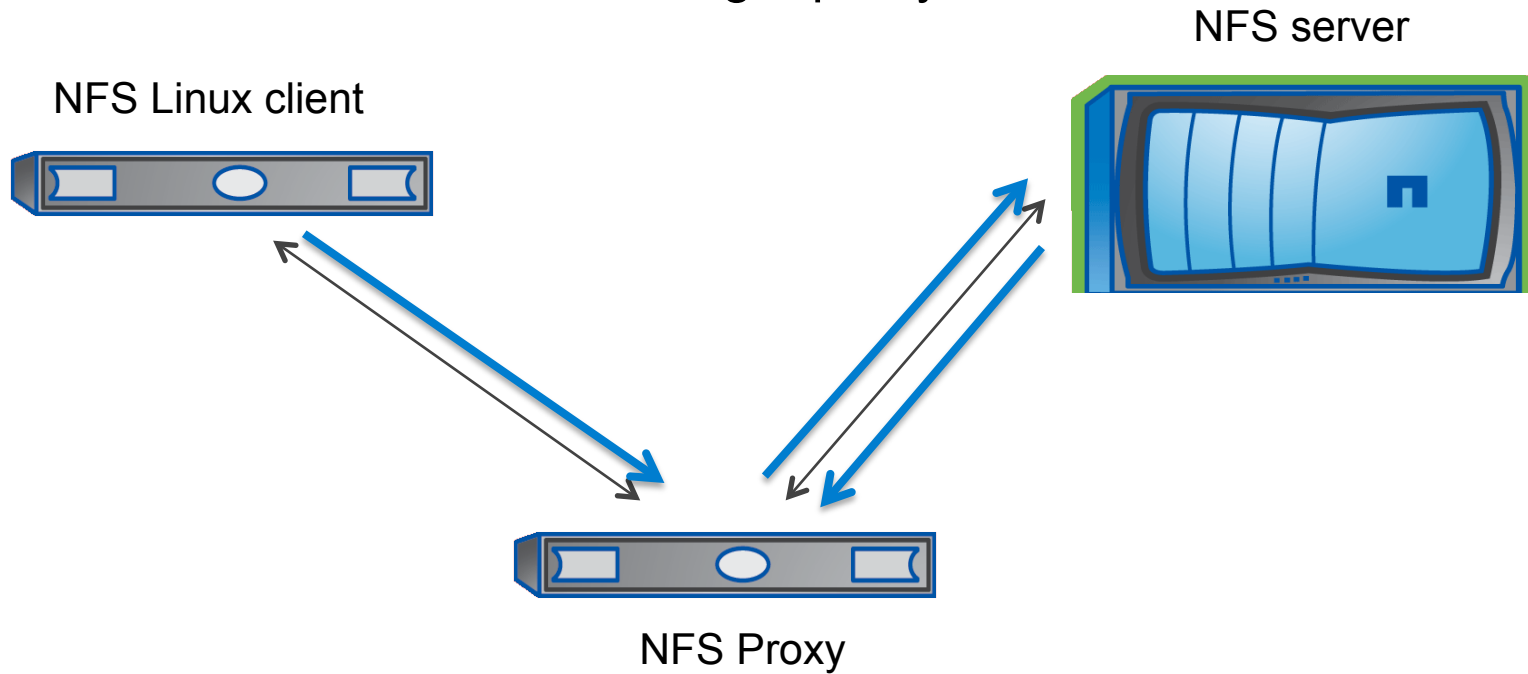




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NFS Proxy enhancements

NFS using a proxy

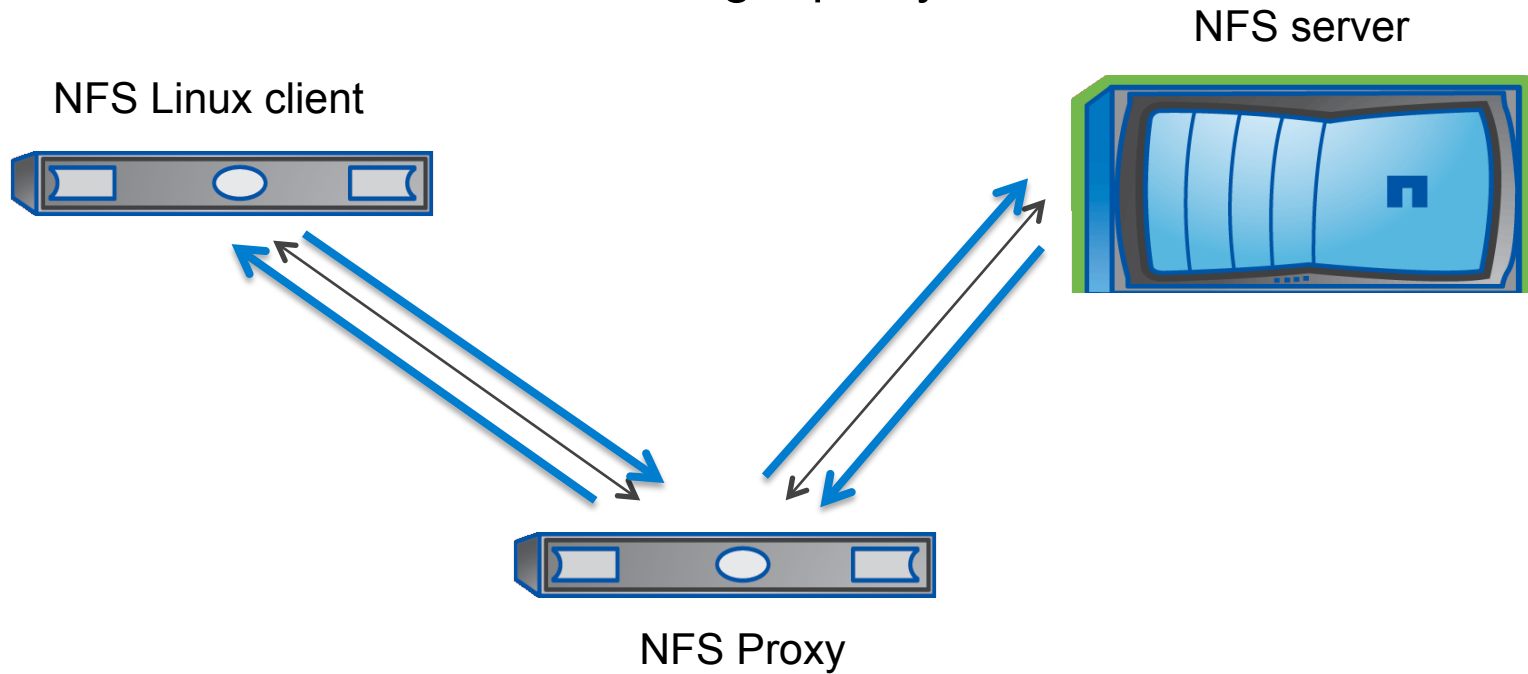




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NFS Proxy enhancements

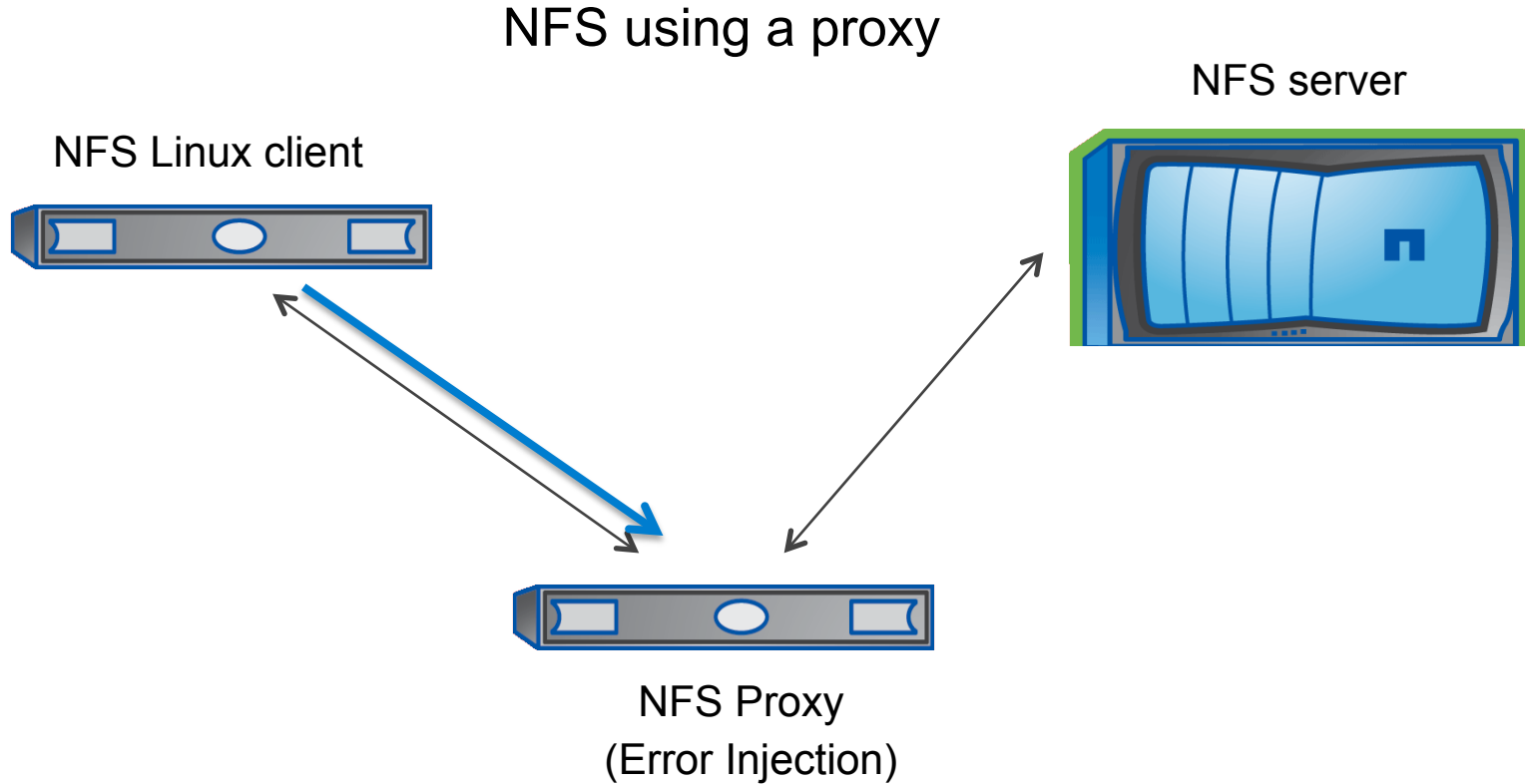
NFS using a proxy





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NFS Proxy enhancements

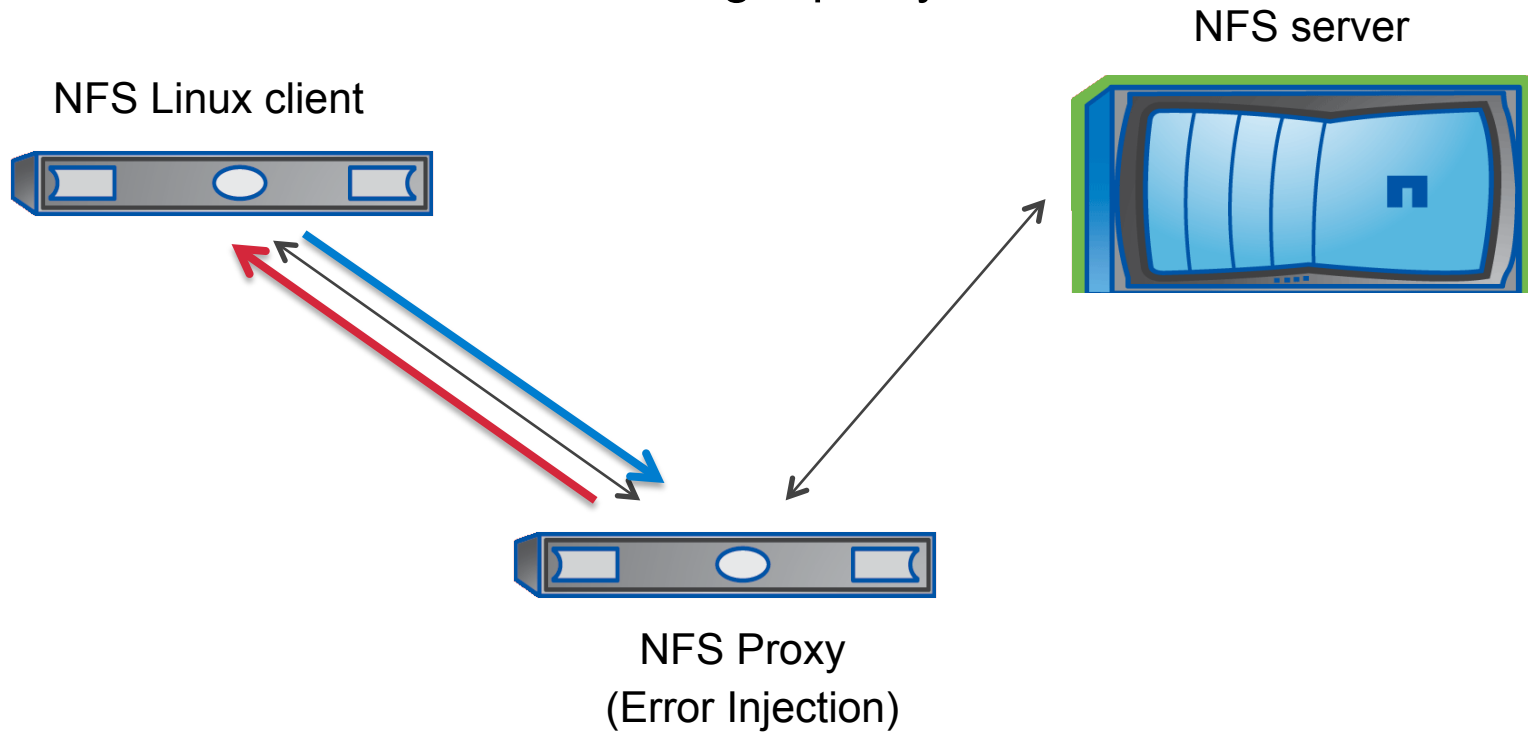




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NFS Proxy enhancements

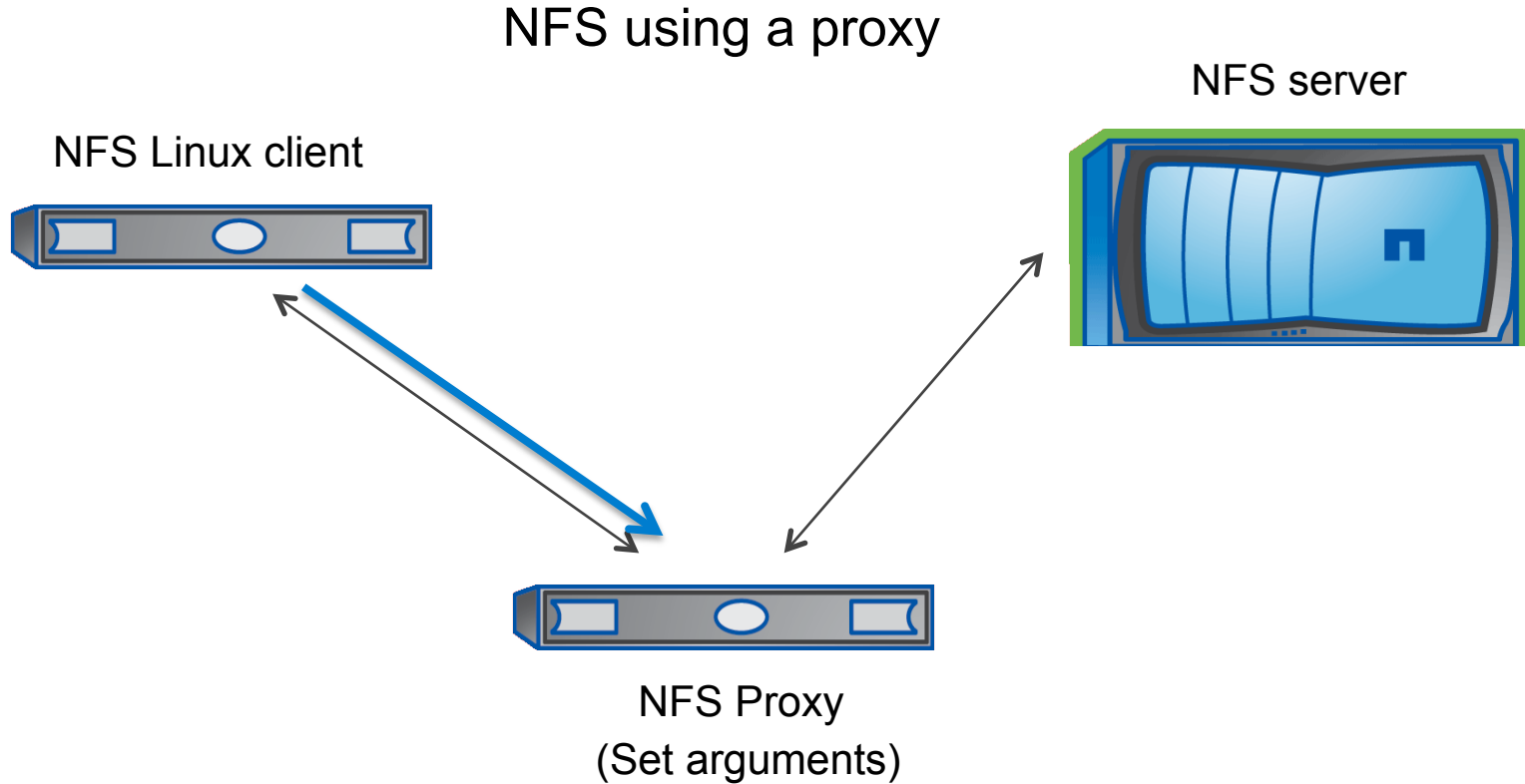
NFS using a proxy





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NFS Proxy enhancements

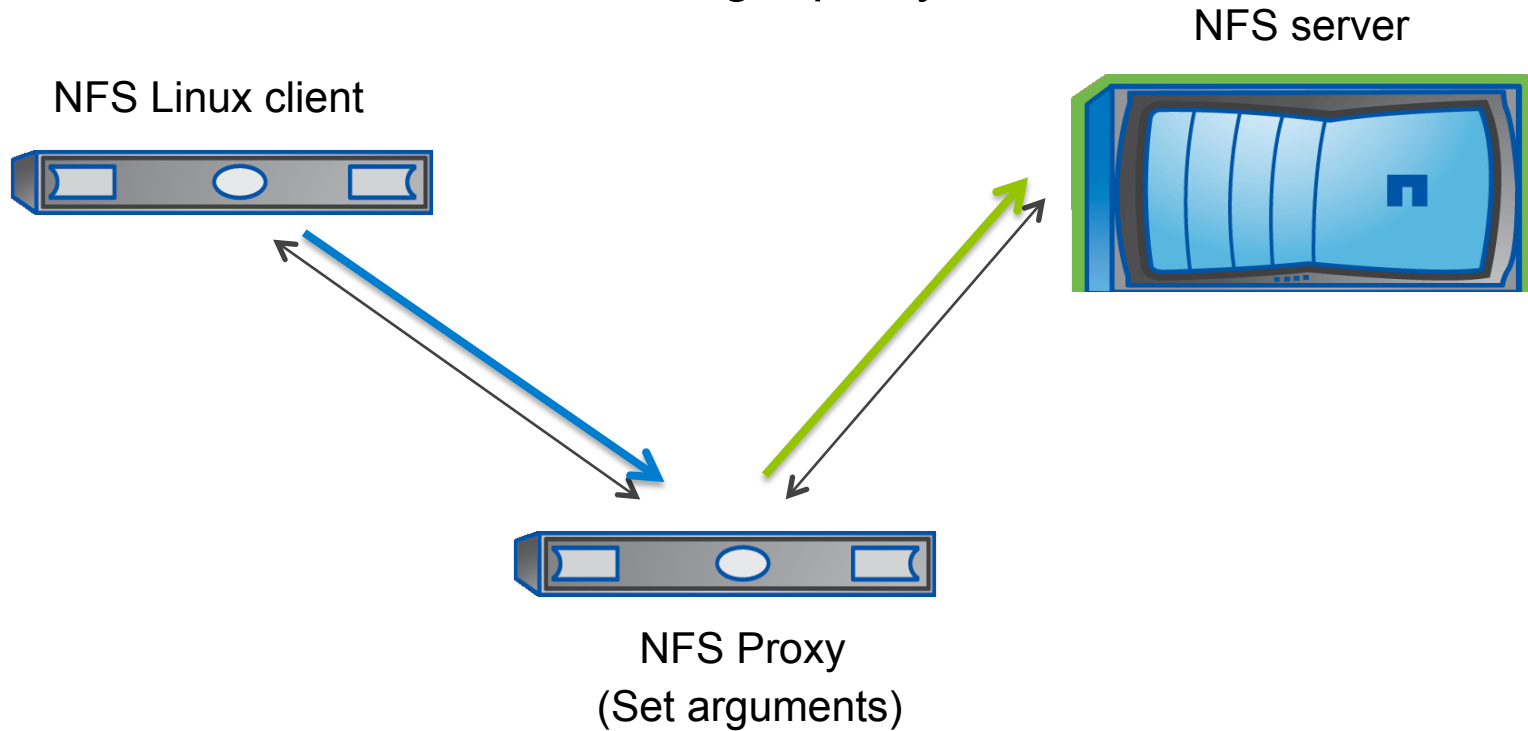




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NFS Proxy enhancements

NFS using a proxy

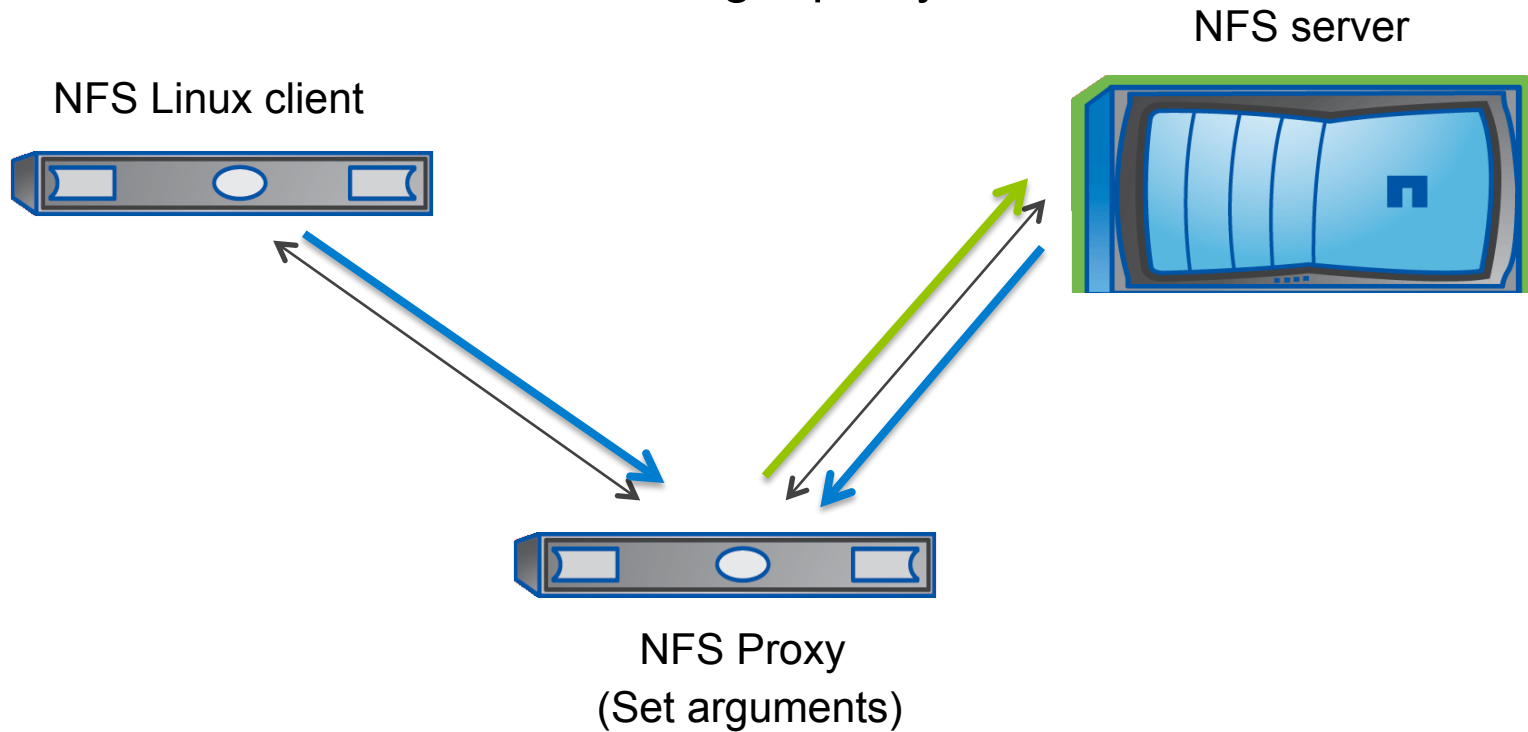




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NFS Proxy enhancements

NFS using a proxy

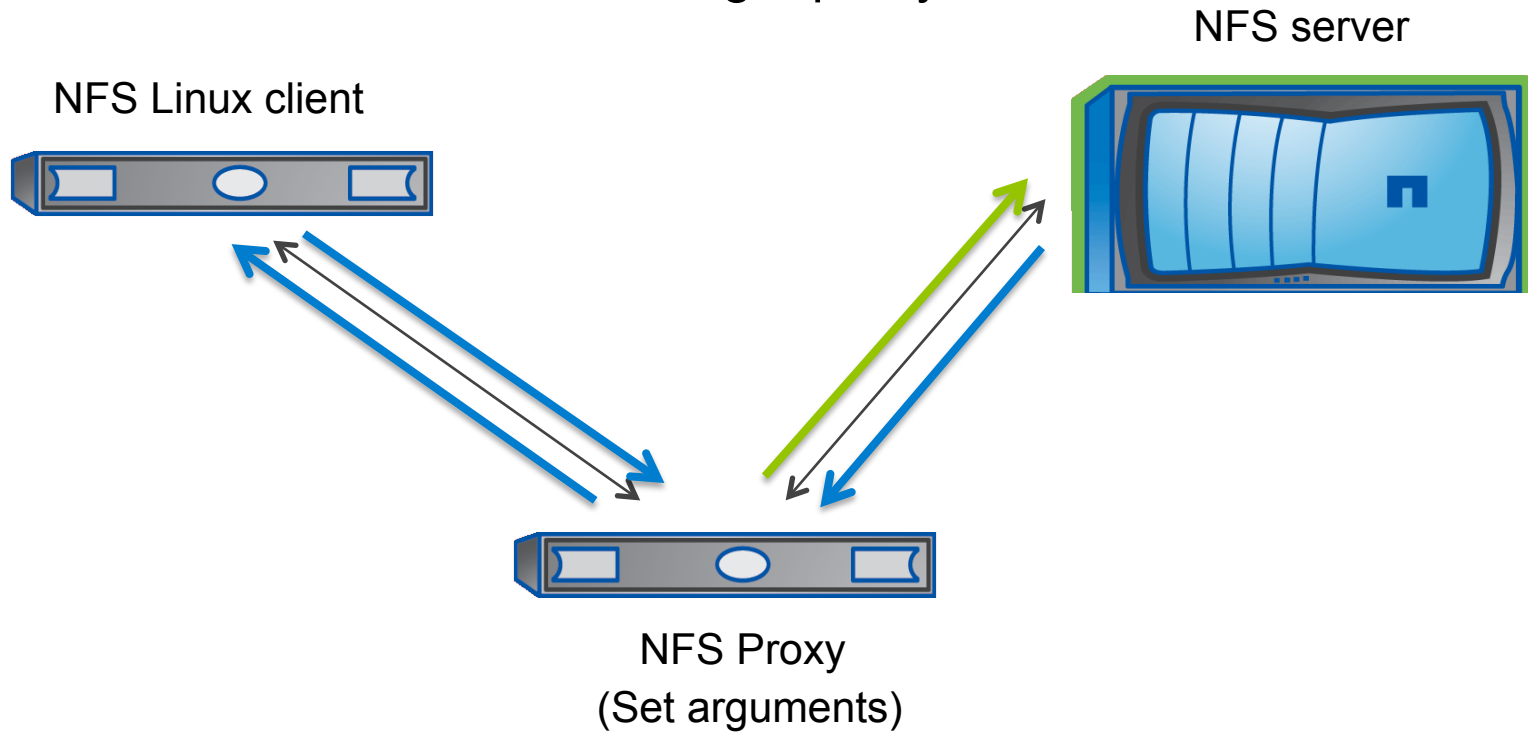




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NFS Proxy enhancements

NFS using a proxy

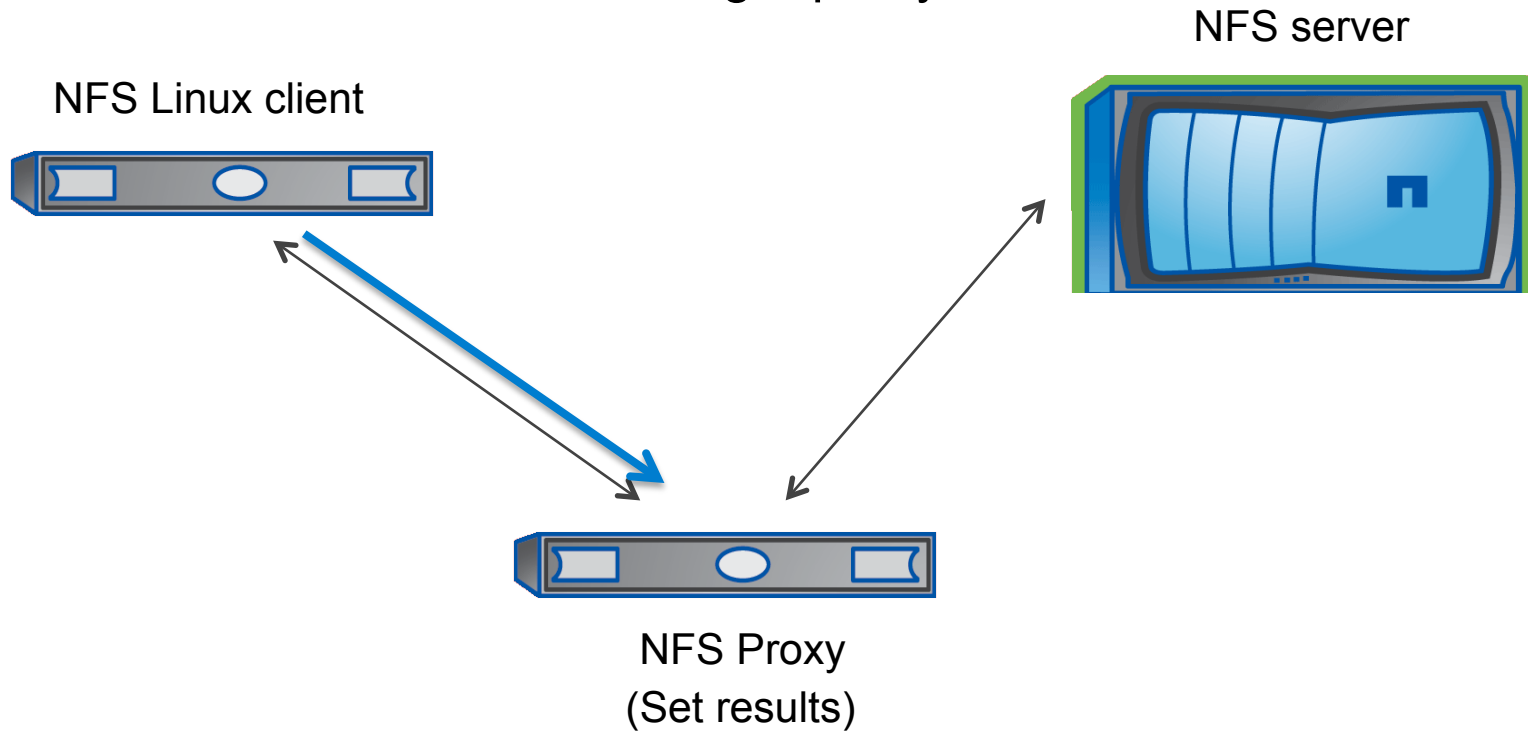




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NFS Proxy enhancements

NFS using a proxy

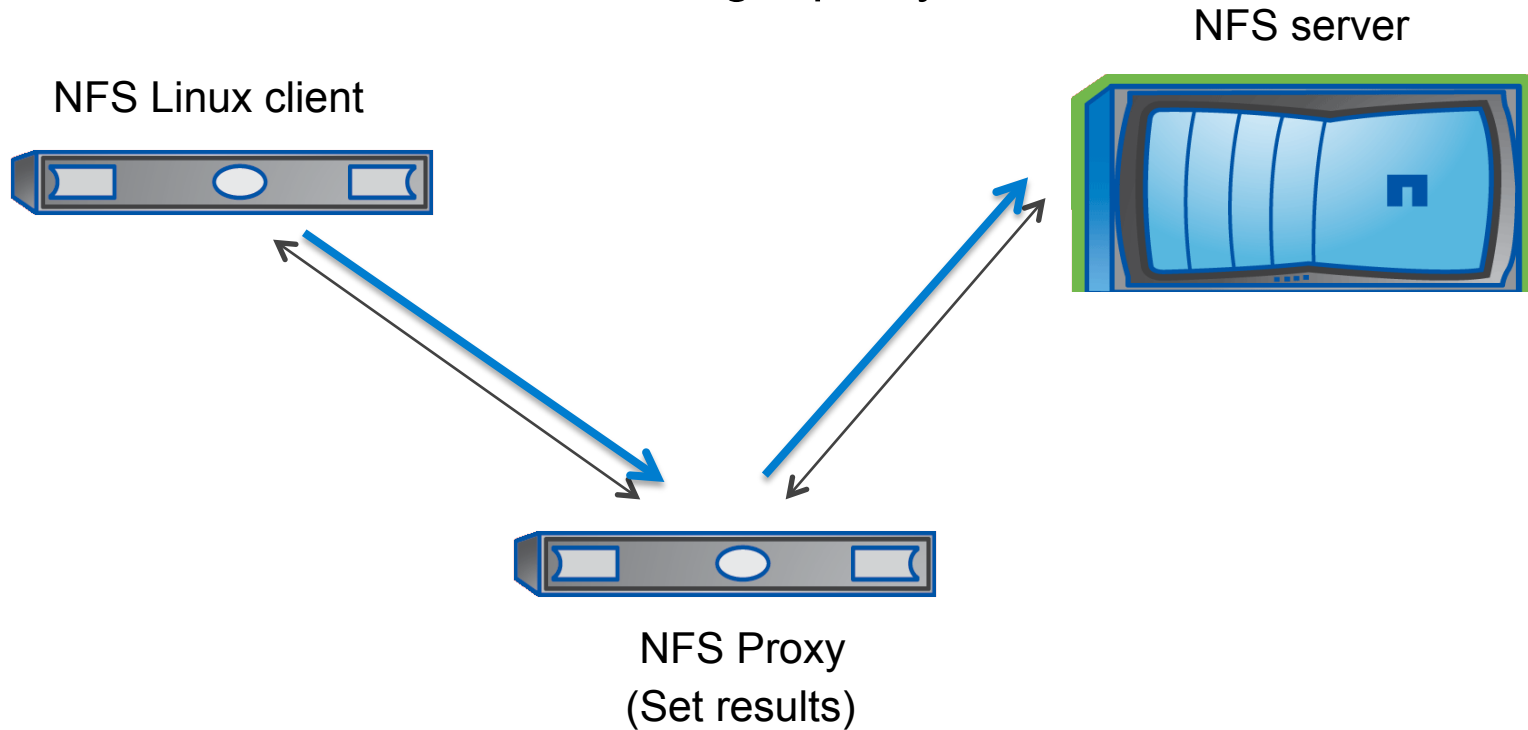




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NFS Proxy enhancements

NFS using a proxy

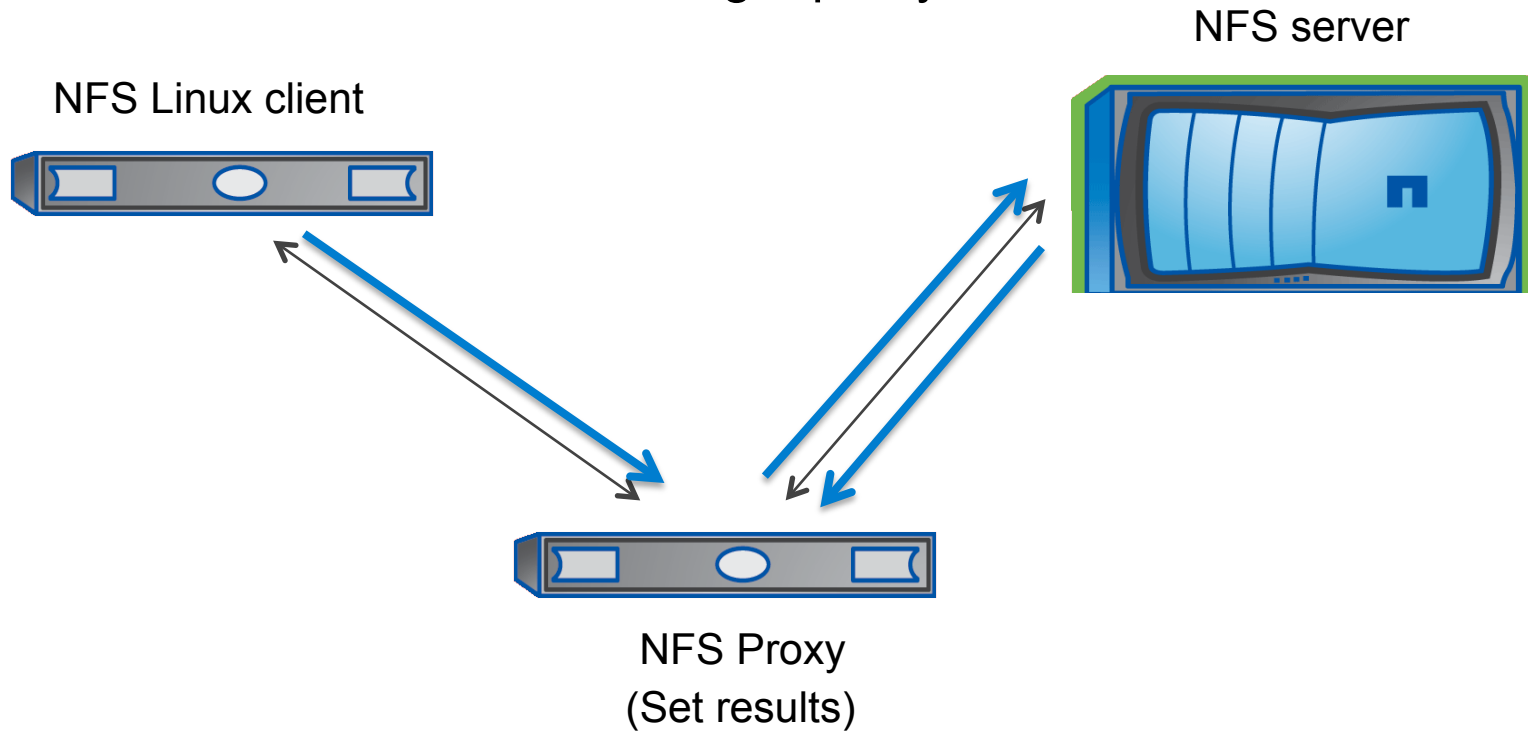




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NFS Proxy enhancements

NFS using a proxy

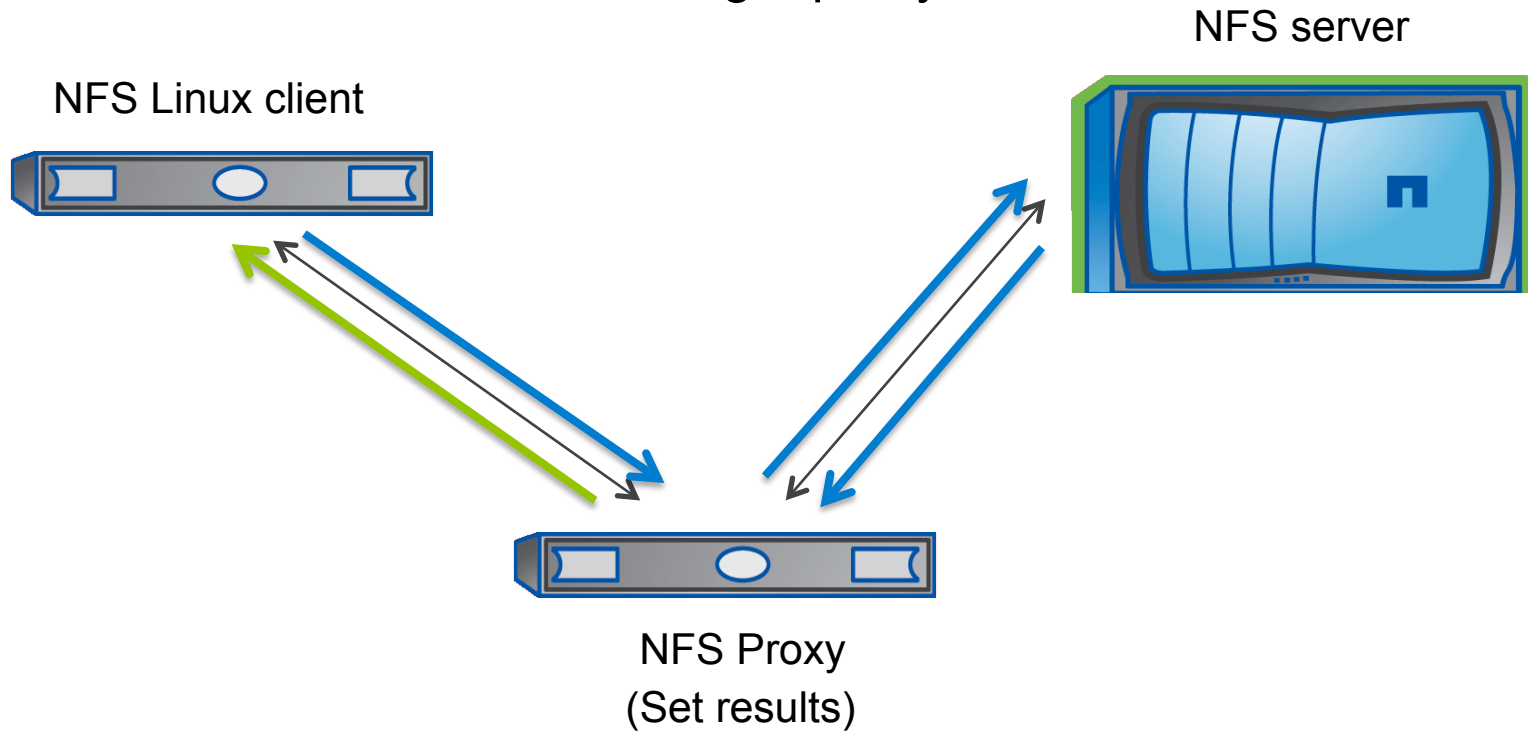




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NFS Proxy enhancements

NFS using a proxy





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NFS Proxy enhancements

```
from proxy_util import Proxy

x = Proxy(host, port)

x.delay(op, reply, delay [, cb=0])

x.inject_error(op [, error=0][, freq=0][, count=0])

x.check_enum([check=True])

x.set_result(op, **kwargs)

x.reset()
```



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NFS Proxy enhancements

Examples:

```
x = Proxy(host, port)
```

```
# Set the iomode of LAYOUGET reply to IOMODE_READ  
x.set_result(OP_LAYOUTGET, iomode=LAYOUTIOMODE4_READ)
```

```
# Set the length of LAYOUGET reply to 0  
x.set_result(OP_LAYOUTGET, length=0)
```

```
# Inject error on EXCHANGE_ID  
x.inject_error(op=OP_EXCHANGE_ID, error=NFS4ERR_DEADSESSION, freq=1)
```

```
# Delay the LAYOUTGET reply by 10 seconds  
x.delay(OP_LAYOUTGET, reply=1, delay=10)
```




Happy Birthday Jorge!!!

Thank you



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