pyATS Practical Example: Fintech Link Validation

Practical pyATS Code Examples for Fintech Link Validation

Network Topology

```
  [DC-A-R1] new-link-1 [DC-B-R1]

      old-link

  All routers run BGP and should peer over new-link-1.
  Latency over new-link-1 should be < 5ms.
```

Testbed File (testbed.yaml)

```
devices:
  dc-a-r1:
    os: iosxe
    type: router
    connections:
      defaults:
        class: unicon.Unicon
      cli:
        protocol: ssh
        ip: 192.168.0.10

  dc-b-r1:
    os: iosxe
    type: router
    connections:
      defaults:
        class: unicon.Unicon
      cli:
        protocol: ssh
        ip: 192.168.0.11
```

Test Script (test_link_validation.py)

```
from pyats.topology import loader
from genie.libs.parser.utils import get_parser_exclude
import logging

log = logging.getLogger(__name__)
testbed = loader.load('testbed.yaml')
dc_a = testbed.devices['dc-a-r1']
dc_b = testbed.devices['dc-b-r1']

def setup():
```

```
    dc_a.connect()
    dc_b.connect()

---

### Ping & Latency Validation

def test_latency():
    result = dc_a.ping('192.168.0.11', count=5)
    log.info(f"Ping result: {result}")
    assert result.success_rate_percent == 100
    assert result.rtt_avg < 5.0, "Latency too high!"

---

### BGP Neighbor Check

def test_bgp_neighbors():
    output = dc_a.parse('show ip bgp summary')
    neighbors = output['vrf']['default']['peers']
    for peer, details in neighbors.items():
        assert details['state_pfxrcd'] != 'Idle', f"BGP peer {peer} not up"
        assert isinstance(details['state_pfxrcd'], int), "No prefixes received"

---

### RIB Validation

def test_routing():
    route_table = dc_a.parse('show ip route')
    routes = route_table['vrf']['default']['address_family']['ipv4']['routes']
    expected_prefix = '10.1.10.0/24'
    assert expected_prefix in routes, "Expected route missing"
    next_hop = routes[expected_prefix]['next_hop']['next_hop_list'][1]['next_hop']
    assert next_hop.startswith('192.168.0.'), "Route not using new link"

---

### BGP Policy Check (Community)

def test_bgp_communities():
    bgp_table = dc_a.parse('show ip bgp')
                                          for          prefix,          info          in
bgp_table['vrf']['default']['address_family']['ipv4']['routes'].items():
        for path in info['index'].values():
            communities = path.get('community', [])
            assert '65000:100' in communities, f"{prefix} missing community"

---

### Job File (job.py)
```

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```
from pyats.easypy import run

def main(runtime):
    run(testscript='test_link_validation.py')
```

Summary Table

Check	Logic
Ping / Latency	Use `ping()` 100% success + <5ms latency
BGP Peerings	`show ip bgp summary` state = Established + prefixes OK
RIB Presence	`show ip route` specific prefixes via expected next-hop
BGP Policy (Community)	`show ip bgp` expected community tags present