



## K-20 Layer-2 Test Results

### Job Information

|               |                            |
|---------------|----------------------------|
| Job ID        | RTASK1518853               |
| Contractor    | University of Washington   |
| Customer      | pomeroy-k12                |
| Report Date   | 2020-06-30 17:14:59        |
| Operator Name | enneking                   |
| Circuit ID    | JNet:POM/WTN/ETH00006209.0 |

File Name: C:\inetpub\wwwroot\k20\_performance\_reports\pomeroy-k12\2020-06-30-c\_pomeroy-k12\_pass.pdf

Comment: Pass. Standard test. Existing circuit live.

**Table of Contents**

|                                                                |    |
|----------------------------------------------------------------|----|
| 1. Setup .....                                                 | 3  |
| 2. Summary .....                                               | 4  |
| 3. Optical [P1]/Port .....                                     | 7  |
| 4. EtherSAM Configuration .....                                | 10 |
| 5. EtherSAM Results .....                                      | 16 |
| 6. Optical [P1]/Ethernet Framed Layer 2/Traffic Analyzer ..... | 20 |
| 7. Clock Synchronization .....                                 | 22 |
| 8. Software Options .....                                      | 24 |
| 9. Ping [P1]/Ping .....                                        | 25 |

## 1. Setup

### 1.1. IPversion Status

| Port  | IP Version |
|-------|------------|
| Port1 | IPv4       |

### 1.2. Transceiver Mode

| Item             | Value      |
|------------------|------------|
| Transceiver Mode | 10GigE LAN |

## 2. Summary

### 2.1. Alarm

#### 2.1.1. Alarms

##### 2.1.1.1. Global

| Alarm    | H        |
|----------|----------|
| Global   | Fault    |
| Log Full | No Fault |

##### 2.1.1.2. Physical

| Alarm     | H        |
|-----------|----------|
| LOS       | No Fault |
| Frequency | No Fault |
| LOC       | No Fault |

| Signal Analysis | Value |
|-----------------|-------|
| Pwr (dBm)       | -2.7  |

| Frequency Analysis | Value         |
|--------------------|---------------|
| Freq (bps)         | 10312534784.0 |
| Offset (ppm)       | 3             |

##### 2.1.1.3. WIS

No information is available

##### 2.1.1.4. Ethernet

| Alarm | H        |
|-------|----------|
| Error | Fault    |
| Link  | No Fault |
| Fault | No Fault |

**2.1.1.5. Higher Layer Protocol**

| Alarm | H        |
|-------|----------|
| Error | No Fault |

**2.1.1.6. Pattern**

No information is available

**2.1.1.7. Other**

| Alarm | H        |
|-------|----------|
| SDT   | No Fault |

**2.1.2. Logger****2.1.2.1. Logger Events**

| ID | Date/Time           | Data Path                                                     | Event        | Duration | Count | Rate     |
|----|---------------------|---------------------------------------------------------------|--------------|----------|-------|----------|
| 1  | 2020-06-30 17:03:34 | Test 1                                                        | Test Started |          |       |          |
| 2  | 2020-06-30 17:04:29 | Optical [P1]/Ethernet Framed Layer 2/Traffic Stream/Stream[1] | Frame Loss   | 00:00:01 | 23    | 9.55E-06 |
| 3  | 2020-06-30 17:14:21 | Test 1                                                        | Test Stopped |          |       |          |

**2.2. Test****2.2.1. Test Status**

| Item        | Value               |
|-------------|---------------------|
| Start Time: | 2020-06-30 17:03:34 |
| Port 1 Link | Up                  |

**2.2.2. Test Configuration**

| Item             | Value             |
|------------------|-------------------|
| Application Type | EtherSAM (Y.1564) |
| Test Name        | BV10.EtS          |
| Test Description |                   |

**2.2.3. Test Preferences**

No information is available

**2.2.4. Clock Configuration**

| Item       | Value    |
|------------|----------|
| Clock Mode | Internal |

**2.2.5. Alarm Analysis**

| Alarm | H        | Seconds |
|-------|----------|---------|
| LOC   | No Fault | 0       |

**2.2.6. Timer Configuration**

| Item              | Value               |
|-------------------|---------------------|
| Start Time Status | Disabled            |
| Start Time        | 2015-07-20 12:19:45 |
| Stop Time Status  | Disabled            |
| Stop Time         | 2015-07-20 12:19:45 |
| Duration Status   | Disabled            |
| Duration          | 15 minutes          |
| On/Off State      | Disabled            |

### 3. Optical [P1]/Port

#### 3.1. TX

##### 3.1.1. Signal Analysis

| Item            | Value  |
|-----------------|--------|
| Output Presence | Active |

##### 3.1.2. Alarm Generation

| Item   | Value    |
|--------|----------|
| Type   | LOS      |
| On/Off | Disabled |

##### 3.1.3. Frequency

| Item                    | Value       |
|-------------------------|-------------|
| Frequency Offset (ppm)  | 0           |
| On/Off                  | Disabled    |
| Actual Frequency (bps)  | 10312499904 |
| Nominal Frequency (bps) | 10312500000 |

#### 3.2. RX

##### 3.2.1. Signal Analysis

| Item        | Value        |
|-------------|--------------|
| Range (dBm) | -14.0 to 2.0 |
| Power (dBm) | -2.7         |

##### 3.2.2. Alarm Analysis

| Alarm     | H        | Seconds |
|-----------|----------|---------|
| LOS       | No Fault | 0       |
| Frequency | No Fault | 0       |

**3.2.3. Frequency Analysis**

| Item                       | Value       |
|----------------------------|-------------|
| Frequency (bps)            | 10312534784 |
| Frequency Offset (bps)     | 34784       |
| Max. Negative Offset (bps) | 0           |
| Max. Positive Offset (bps) | 34848       |

**3.3. Interface****3.3.1. Configuration**

| Item         | Value |
|--------------|-------|
| Flow Control | None  |

**3.3.2. Status**

| Item | Value |
|------|-------|
| Link | Up    |

**3.4. Network****3.4.1. MAC Configuration**

| Item        | Value             |
|-------------|-------------------|
| MAC Address | 00:03:01:08:9E:3D |

**3.4.1.1. VLAN**

| Item        | Value    |
|-------------|----------|
| Enable VLAN | Disabled |



**3.4.2. IP Configuration**

| Item                   | Value         |
|------------------------|---------------|
| IP Address             | 10.10.114.173 |
| Subnet Mask            | 255.255.255.0 |
| Enable DHCP            | Disabled      |
| Enable Default Gateway | Disabled      |
| Default Gateway        | N/A           |

**3.4.3. Frame Format**

| Item   | Value       |
|--------|-------------|
| Format | Ethernet II |
| OUI    | N/A         |

## 4. EtherSAM Configuration

### 4.1. Overview

#### 4.1.1. EtherSAM Configuration Overview

| Service | Profile | Enable   | Service Name | Frame Size | CIR (Mbps) | Max Jitter (ms) | Max Latency (ms) | Frame Loss (%) | CBS (Bytes) |
|---------|---------|----------|--------------|------------|------------|-----------------|------------------|----------------|-------------|
| 1       | Data    | Enabled  | 1Gb CIR      | Random     | 950.0      | 2               | 28               | 0.01           | N/A         |
| 2       | Data    | Disabled | Service 2    | 74         | 5000.0     | 2               | 15               | 0.1            | N/A         |
| 3       | Data    | Disabled | Service 3    | 74         | 5000.0     | 2               | 15               | 0.1            | N/A         |
| 4       | Data    | Disabled | Service 4    | 74         | 5000.0     | 2               | 15               | 0.1            | N/A         |
| 5       | Data    | Disabled | Service 5    | 74         | 5000.0     | 2               | 15               | 0.1            | N/A         |
| 6       | Data    | Disabled | Service 6    | 74         | 5000.0     | 2               | 15               | 0.1            | N/A         |
| 7       | Data    | Disabled | Service 7    | 74         | 5000.0     | 2               | 15               | 0.1            | N/A         |
| 8       | Data    | Disabled | Service 8    | 74         | 5000.0     | 2               | 15               | 0.1            | N/A         |
| 9       | Data    | Disabled | Service 9    | 74         | 5000.0     | 2               | 15               | 0.1            | N/A         |
| 10      | Data    | Disabled | Service 10   | 74         | 5000.0     | 2               | 15               | 0.1            | N/A         |

#### 4.1.2. Global Verdict

#### 4.1.3. Enable Sub-Tests

| Item                       | Value    |
|----------------------------|----------|
| Service Configuration Test | Enabled  |
| Ramp Test                  | Enabled  |
| Burst Test                 | Disabled |
| Service Performance Test   | Enabled  |

**4.1.4. Sub-Tests Duration**

| Item                       | Duration     |
|----------------------------|--------------|
| Service Configuration Test | 00d:00:00:20 |
| Service Performance Test   | 00d:00:10:00 |

**4.1.5. Total TX Rate (%)**

| Item      | Value |
|-----------|-------|
| Available | 90.5  |
| Committed | 9.5   |

**4.2. Services****4.2.1. 1Gb CIR****4.2.1.1. SLA Parameters**

| Item                      | Value |
|---------------------------|-------|
| CIR (Mbit/s)              | 950.0 |
| CIR+EIR (Mbit/s)          | N/A   |
| Traffic Policing (Mbit/s) | N/A   |
| CBS (Bytes)               | N/A   |
| EBS (Bytes)               | N/A   |
| Burst Max Rate (Mbit/s)   | N/A   |
| Max Jitter (ms)           | 2     |
| Max Latency (ms)          | 28    |
| Frame Loss (%)            | 0.01  |

**4.2.1.2. Frame Configuration****4.2.1.2.1. Service Profile**

| Item         | Value |
|--------------|-------|
| Profile Type | Data  |

**4.2.1.2.2. Frame Configuration**

| Item      | Value       | Size   |
|-----------|-------------|--------|
| Data Link | Ethernet II | Random |
| Network   | IPv4        | Random |
| Transport | UDP         | Random |

**4.2.1.3. MAC****4.2.1.3.1. Source**

| Item        | Value             |
|-------------|-------------------|
| MAC Address | 00:03:01:08:9E:3D |

**4.2.1.3.2. Destination**

| Item                | Value             |
|---------------------|-------------------|
| MAC Address         | 00:03:01:10:2C:83 |
| Resolve MAC Address | Enabled           |
| Status              | Resolved          |

**4.2.1.3.2.1. VLAN**

| Item        | Value    |
|-------------|----------|
| Enable VLAN | Disabled |

**4.2.1.3.3. Frame Format**

| Item             | Value       |
|------------------|-------------|
| Format           | Ethernet II |
| OUI              | N/A         |
| User Defined OUI | N/A         |
| EtherType        | 0800        |

**4.2.1.4. MPLS Configuration**

| Item         | Value |
|--------------|-------|
| Label #2     | N/A   |
| COS / EXP #2 | N/A   |
| TTL #2       | N/A   |

**4.2.1.5. IP****4.2.1.5.1. Source**

| Item        | Value         |
|-------------|---------------|
| IP Address  | 10.112.0.01   |
| Subnet Mask | 255.255.255.0 |

**4.2.1.5.1.1. IP Multiplier**

| Item   | Value    |
|--------|----------|
| Enable | Disabled |
| Range  | N/A      |

**4.2.1.5.2. Destination**

| Item       | Value       |
|------------|-------------|
| IP Address | 10.112.0.35 |
| TTL        | 128         |
| IP TOS/DS  | 00          |

**4.2.1.5.2.1. Advanced TOS/DS**

| Item                           | Value    |
|--------------------------------|----------|
| Enable Differentiated Services | Disabled |

**4.2.1.5.2.1.1. DS**

No information is available

**4.2.1.5.2.1.2. TOS**

| Item          | Value         |
|---------------|---------------|
| Precedence    | 000 (Routine) |
| Delay         | Normal        |
| Throughput    | Normal        |
| Reliability   | Normal        |
| Monetary Cost | Normal        |
| Reserved Bit  | 0             |

**4.2.1.5.2.2. Default Gateway**

| Item            | Value    |
|-----------------|----------|
| Enable          | Disabled |
| Default Gateway | N/A      |

**4.2.1.6. UDP****4.2.1.6.1. Source**

| Item | Value |
|------|-------|
| Port | 49184 |

**4.2.1.6.2. Destination**

| Item | Value |
|------|-------|
| Port | 7     |

**4.2.1.7. Payload**

No information is available

**4.3. Ramp**

| Step List         | Value (% of CIR) |
|-------------------|------------------|
| Step Time (s)     | 5                |
| Ramp Duration (s) | 25               |

| Step1 (%) | 50.0             |
|-----------|------------------|
| Step2 (%) | 75.0             |
| Step3 (%) | 90.0             |
| Step4     | CIR              |
| Step5     | Traffic Policing |

**4.4. Burst**

| Item                     | Value |
|--------------------------|-------|
| Number of Burst Sequence | 2     |
| Refill Delay Ratio (%)   | 50    |
| Burst/IR Frame Ratio (%) | 90    |

**4.4.1. Burst Test**

| Service No. | CBS Test Time (s) | EBS Test Time (s) | Total Burst Test Time (s) |
|-------------|-------------------|-------------------|---------------------------|
| 1           | N/A               | N/A               | --                        |
| 2           | N/A               | N/A               | --                        |
| 3           | N/A               | N/A               | --                        |
| 4           | N/A               | N/A               | --                        |
| 5           | N/A               | N/A               | --                        |
| 6           | N/A               | N/A               | --                        |
| 7           | N/A               | N/A               | --                        |
| 8           | N/A               | N/A               | --                        |
| 9           | N/A               | N/A               | --                        |
| 10          | N/A               | N/A               | --                        |
| Total       | 0                 | 0                 | 0                         |

## 5. EtherSAM Results

### 5.1. Overview

#### 5.1.1. Global Progress

| Item        | Value     |
|-------------|-----------|
| Test Status | Completed |
| Verdict     | PASS      |

#### 5.1.2. Configuration Test Overview

##### 5.1.2.1. 1Gb CIR

| Item                 | Value | Verdict |
|----------------------|-------|---------|
| Frame Loss (%)       | 0.000 | PASS    |
| Max Jitter (ms)      | 0.125 | PASS    |
| Max Latency (ms)     | 9.914 | PASS    |
| Max RX Rate (Mbit/s) | 950   | PASS    |

#### 5.1.3. Performance Test Overview

##### 5.1.3.1. 1Gb CIR

| Item                   | Value   | Verdict |
|------------------------|---------|---------|
| Average RX Rate (Mbps) | 949.999 | PASS    |
| Frame Loss (%)         | 0.000   | PASS    |
| Max Jitter (ms)        | 0.192   | PASS    |
| Max Latency (ms)       | 10.298  | PASS    |
| Verdict                | PASS    | PASS    |

## 5.2. Service Configuration Test

### 5.2.1. 1Gb CIR

#### 5.2.1.1. Service Verdict

| Item            | Verdict |
|-----------------|---------|
| Service Verdict | PASS    |



**5.2.1.2. Max RX Rate**

| Item                 | Value | Verdict |
|----------------------|-------|---------|
| Max RX Rate (Mbit/s) | 950   | PASS    |

**5.2.1.3. Step 1**

| Item                   | Value   | Verdict        |
|------------------------|---------|----------------|
| Percentage of CIR      | 50.0    | Not Applicable |
| Frame Loss (%)         | 0.000   | PASS           |
| Max Jitter (ms)        | 0.125   | PASS           |
| Max Latency (ms)       | 9.863   | PASS           |
| Verdict                | PASS    | PASS           |
| Average RX Rate (Mbps) | 474.996 | N/A            |

**5.2.1.4. Step 2**

| Item                   | Value   | Verdict        |
|------------------------|---------|----------------|
| Percentage of CIR      | 75.0    | Not Applicable |
| Frame Loss (%)         | 0.000   | PASS           |
| Max Jitter (ms)        | 0.083   | PASS           |
| Max Latency (ms)       | 9.839   | PASS           |
| Verdict                | PASS    | PASS           |
| Average RX Rate (Mbps) | 712.496 | N/A            |

**5.2.1.5. Step 3**

| Item                   | Value   | Verdict        |
|------------------------|---------|----------------|
| Percentage of CIR      | 90.0    | Not Applicable |
| Frame Loss (%)         | 0.000   | PASS           |
| Max Jitter (ms)        | 0.079   | PASS           |
| Max Latency (ms)       | 9.854   | PASS           |
| Verdict                | PASS    | PASS           |
| Average RX Rate (Mbps) | 854.999 | N/A            |

**5.2.1.6. Step CIR**

| Item                   | Value | Verdict |
|------------------------|-------|---------|
| Frame Loss (%)         | 0.000 | PASS    |
| Max Jitter (ms)        | 0.121 | PASS    |
| Max Latency (ms)       | 9.914 | PASS    |
| Verdict                | PASS  | PASS    |
| Average RX Rate (Mbps) | 950   | N/A     |

**5.3. Service Performance Test****5.3.1. Port 1****5.3.1.1. 1Gb CIR****5.3.1.1.1. Sequence Tracking**

| Error           | H        | Seconds | Count | Rate     | Percentage |
|-----------------|----------|---------|-------|----------|------------|
| Out-Of-Sequence | No Fault | 0       | 0     | 0.00E00  | 0.000      |
| Frame Loss      | Fault    | 1       | 23    | 2.62E-07 | < 0.001    |

**5.3.1.1.2. RX Rate**

| Item           | Value    |
|----------------|----------|
| Minimum (%)    | 9.498    |
| Maximum (%)    | 9.5      |
| Current (%)    | 9.5      |
| Average (%)    | 9.499    |
| RX Frame Count | 87888621 |

**5.3.1.1.3. Round Trip Latency**

| Item         | Value  |
|--------------|--------|
| Minimum (ms) | 9.712  |
| Maximum (ms) | 10.298 |
| Current (ms) | 9.761  |
| Average (ms) | 9.767  |

**5.3.1.1.4. Jitter**

| Item              | Value    |
|-------------------|----------|
| Minimum (ms)      | < 0.015  |
| Maximum (ms)      | 0.192    |
| Current (ms)      | < 0.015  |
| Average (ms)      | < 0.015  |
| Number of Samples | 87482606 |
| Estimate (ms)     | < 0.015  |

## 6. Optical [P1]/Ethernet Framed Layer 2/Traffic Analyzer

### 6.1. Eth. RX

#### 6.1.1. Configuration

| Item                | Value    |
|---------------------|----------|
| Oversize Monitoring | Disabled |

#### 6.1.2. Alarm Analysis

| Alarm        | H        | Seconds |
|--------------|----------|---------|
| Link Down    | No Fault | 0       |
| Local Fault  | No Fault | 0       |
| Remote Fault | No Fault | 0       |

#### 6.1.3. Error Analysis

| Error             | H        | Seconds | Count | Rate    |
|-------------------|----------|---------|-------|---------|
| Block             | No Fault | 0       | 0     | 0.00E00 |
| FCS               | No Fault | 0       | 0     | 0.00E00 |
| Jabber/Giant      | No Fault | 0       | 0     | 0.00E00 |
| Oversize          | N/A      | N/A     | N/A   | N/A     |
| Runt              | No Fault | 0       | 0     | 0.00E00 |
| Undersize         | No Fault | 0       | 0     | 0.00E00 |
| Total Error Count |          |         | 0     |         |

### 6.2. Eth. Stats

#### 6.2.1. Total Frame Counts

|             | RX Count | TX Count |
|-------------|----------|----------|
| Total Count | 90195349 | 90195035 |

**6.2.2. Valid Frame Counts**

| Frames    | TX Count | RX Count |
|-----------|----------|----------|
| Multicast | 0        | 348      |
| Broadcast | 11       | 0        |
| Unicast   | 90195024 | 90195001 |
| N-Unicast | 11       | 348      |
| Total     | 90195035 | 90195349 |

**6.2.3. Frame Size**

| Frame Size  | Count    | Total (%) |
|-------------|----------|-----------|
| < 64        | 0        | 0.000     |
| 64          | 63575    | 0.070     |
| 65 - 127    | 3911568  | 4.337     |
| 128 - 255   | 7942444  | 8.806     |
| 256 - 511   | 15857754 | 17.582    |
| 512 - 1023  | 31725813 | 35.175    |
| 1024 - 1518 | 30694195 | 34.031    |
| > 1518      | 0        | 0.000     |

**6.2.4. Throughput**

| Item             | Value      |
|------------------|------------|
| Bandwidth (Mbps) | 0.000544   |
| Utilization (%)  | 0.00000704 |
| Frame Rate (fps) | 1          |

**6.3. Higher Layers****6.3.1. Higher Layer Protocol**

| Error              | H        | Seconds | Count | Rate    |
|--------------------|----------|---------|-------|---------|
| IP Header Checksum | No Fault | 0       | 0     | 0.00E00 |
| UDP Checksum       | No Fault | 0       | 0     | 0.00E00 |
| TCP Checksum       | No Fault | 0       | 0     | --      |

## 7. Clock Synchronization

### 7.1. RX

#### 7.1.1. Configuration

| Item             | Value |
|------------------|-------|
| Interface Type   | None  |
| Termination Mode | N/A   |
| Line Coding      | N/A   |
| Framing          | N/A   |

#### 7.1.2. Alarm Analysis

| Alarm     | State |
|-----------|-------|
| LOS       | N/A   |
| AIS       | N/A   |
| LOF       | N/A   |
| Frequency | N/A   |

#### 7.1.3. Frequency Analysis

| Item                   | Value |
|------------------------|-------|
| Frequency (bps)        | --    |
| Frequency Offset (ppm) | --    |

## 7.2. Backplane

### 7.2.1. Configuration

| Item       | Value    |
|------------|----------|
| Clock Mode | Internal |
| Enable     | Disabled |

### 7.2.2. Alarm Analysis

| Alarm | State    |
|-------|----------|
| LOC   | No Fault |

**7.3. Clock Out****7.3.1. Configuration**

| Item              | Value |
|-------------------|-------|
| Clock Out Divider | 16    |

## 8. Software Options

### 8.1. Available Options

| Category | Name            | Description                                              | Status   |
|----------|-----------------|----------------------------------------------------------|----------|
| Feature  | SK-ADV-FILTERS  | Advanced Traffic Filtering                               | Enabled  |
| Feature  | SK-DATA-CAPTURE | Ethernet Frame Capture for Advanced Troubleshooting      | Disabled |
| Feature  | SK-ETHERSAM     | Ethernet Service Activation Methodology Application Type | Enabled  |
| Feature  | SK-IPV6         | Internet Protocol Version 6 (IPv6)                       | Disabled |
| Feature  | SK-MPLS         | Multi Protocol Label Switching                           | Disabled |
| Feature  | SK-PBB-TE       | Provider Backbone Bridge with Traffic Engineering        | Disabled |
| Feature  | SK-TRAFFIC-SCAN | Traffic Scan Troubleshooting Feature                     | Disabled |
|          |                 |                                                          |          |
| Network  | SK-LAN          | Local Area Network                                       | Enabled  |
| Network  | SK-WAN          | Wide Area Network                                        | Enabled  |



## 9. Ping [P1]/Ping

### 9.1. Configuration

#### 9.1.1. Ping

##### 9.1.1.1. Setup

| Item       | Value         |
|------------|---------------|
| IP Address | 10.10.114.172 |
| Run        | Disabled      |

##### 9.1.1.1.1. Configuration

| Item                  | Value    |
|-----------------------|----------|
| Timeout (ms)          | 4000     |
| Delay (ms)            | 1000     |
| Data Size (Bytes)     | 32       |
| Time To Live (TTL)    | 128      |
| Attempts              | 4        |
| Continuous            | Disabled |
| Type Of Service (TOS) | 00       |

##### 9.1.1.2. Results

No information is available

##### 9.1.1.2.1. Statistics

No information is available

#### 9.1.2. TraceRoute

##### 9.1.2.1. Setup

| Item       | Value         |
|------------|---------------|
| IP Address | 10.10.114.172 |
| Run        | Disabled      |

**9.1.2.1.1. Configuration**

| Item           | Value |
|----------------|-------|
| Timeout (ms)   | 4000  |
| Max. Hop Count | 128   |

**9.1.2.2. Results**

No information is available

**9.1.2.2.1. Statistics**

No information is available