Intrusion Detection System (IDS)
A device or software that offers cyber security
Discovery of invasions and attacks
Performing Deep Packet inspection techniques
Types of IDS based on target of monitoring
Host Based IDS
Network Based IDS
Types of IDS based on Detection
Signature Based IDS
Anomaly Based IDS

Snort
Powerful and popular network IDS
Free and open source software.
Supported by wide range of rules
Ability to perform Deep Packet inspection
Real time traffic analysis on networks.
Modes
- Sniffer
- Packet Logger
- Network intrusion detection

The Memristor
Nanoscale non-volatile device
Large varying resistance range
On Resistance : 125KΩ
Off Resistance : 125MΩ

Architecture for SNORT IDS
Substring matching of content
Header matching
AND logic

Results

<table>
<thead>
<tr>
<th>System/ Parameter</th>
<th>Memristor crossbar</th>
<th>Intel E8400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area (mm²)</td>
<td>2.02E-02</td>
<td>107</td>
</tr>
<tr>
<td>Power (W)</td>
<td>4.11E-04</td>
<td>65</td>
</tr>
<tr>
<td>Throughput(Mbps)</td>
<td>408</td>
<td>15.7</td>
</tr>
</tbody>
</table>

Conclusion
Intrusion Detection is done at
Extreme low power about 150K times
power efficiency of Intel processor.
Consumes very little area for desired
string matching task
Obtained better throughput than
traditional architectures
Can be widely used in power limited
devices like mobiles etc.