Overview

The S2 NetBox™ implements a fully distributed, solid state IP network appliance architecture. The S2 Network Controller (S2NC) is the server for multiple network nodes and includes an embedded software suite with web server, ODBC-compliant database management system, and embedded application software suite. All user operation is accomplished using a web browser and all content is served by the S2NC. To support the widest range of applications, network controllers are available in two capacities, standard and XL.

One or more IP-connected S2 Network Nodes (S2NN), each capable of supporting up to seven (7) Application Blade Modules, provide security device terminations. Nodes that share a subnet with the S2NC are automatically discovered, simplifying configuration; no switches or jumpers are used. Nodes not on a common subnet are configured with the provided setup utility, allowing them to be placed anywhere a network can reach.

Application Blade Modules connect physical security devices such as card readers, alarm points, and temperature points to the network nodes. Access control readers support the industry standard Wiegand protocol; inputs are quad-state (open, short, normal, alarm) alarm monitoring points; outputs are form C relays suitable for driving electric door operators; and, temperature points are 8 bit analog points accurate to within 0.5°C. The S2 NetDoor MicroNode is a unique device that supplies all connections necessary for two fully access controlled doors and can be powered externally or through PoE – including electric strikes – for a single cable connection.

Software for the entire system is embedded in flash memory and updates are delivered online and completed in a single operation. Data storage is provided in flash ROM, removable compact flash, or over the network using network attached storage (NAS) or FTP.

The S2 NetBox communicates with digital video recorders (DVRs) and IP video cameras using the IP network. Because processing takes place as close to the network edge as possible, failure of any single component does not compromise other components in the system. The solid state design of the S2 NetBox further ensures a superior MTBF (mean time between failures) compared to older client server architectures. Should support be required, the integrated collaboration software connects the user to S2’s online technical support personnel.

Communication over networks is protected to ensure privacy and authenticity. SSL is available for communication between the S2NC and web browser, and every message between an S2NN and the S2NC contains a unique, secure message authentication code, allowing use of public networks where desired. The S2 NetBox supports application extension through its web-based API using XML-formatted commands sent to the S2NC with HTTP calls. Message authentication codes assure authenticity and SSL further secures message traffic.
**Architecture in detail...**

The S2 Network Controller (S2NC) is a solid state network appliance that acts as a server for an S2 NetBox system. It hosts the web server, database server, data storage, and application logic. For larger applications, the S2 NetBox XL replaces the S2NC and provides up to 10X the throughput. XL systems are supplied as a 2U rack mount and include redundant internal hard disk storage.

**S2 Network Nodes (S2NN)** are the connection points for card readers, monitoring points, relay outputs, and temperature points. Several enclosure styles are available for S2 NetBox components:

<table>
<thead>
<tr>
<th>Enclosure</th>
<th>Blades</th>
<th>H</th>
<th>W</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Std. wall mount</em></td>
<td>7</td>
<td>17&quot;</td>
<td>15&quot;</td>
<td>6.75&quot;</td>
</tr>
<tr>
<td>Small wall mount</td>
<td>2</td>
<td>12&quot;</td>
<td>12&quot;</td>
<td>5.00&quot;</td>
</tr>
<tr>
<td><em>Rack mount</em></td>
<td>7</td>
<td>7&quot;</td>
<td>17&quot;</td>
<td>15.0&quot;</td>
</tr>
<tr>
<td>MicroNode</td>
<td>7</td>
<td>7&quot;</td>
<td>7&quot;</td>
<td>3.5&quot;</td>
</tr>
</tbody>
</table>
* Available in UL 294-listed configuration.

**S2 NetBox Application Modules**, or blades, connect to the I²C bus of an S2 Network Node. Blades are automatically recognized by the node, and addressed without jumpers or switches. Four different blade types are available:

<table>
<thead>
<tr>
<th>Blade Module</th>
<th>Inputs</th>
<th>Outputs</th>
<th>Readers</th>
<th>Temp pt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access control</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Alarm input</td>
<td>8</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Relay output</td>
<td>-</td>
<td>8</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Temperature</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>8</td>
</tr>
</tbody>
</table>

**S2 Network Controller (standard)**

- Network nodes supported: 32
- Processor: Intel IXP425
- RAM memory: 128 MB
- Flash ROM memory: 48 MB
- Compact flash (CF) memory: 8 GB (max.)

**S2 Network Controller (XL)**

- Network nodes supported: 128
- Processor (minimum): 1 GHz Celeron
- RAM memory (minimum): 1 GB
- Mirrored hard disk drives (minimum): 60 GB

**S2 Network Node (S2NN)**

- Blades per network node: 7
- RAM memory / Flash ROM: 4 MB / 2 MB
- IP address determination: static or DHCP
- Serial interfaces: 1
- Temperature precision (range): 0.5°C (0º - 70ºC)

**S2 NetDoor MicroNode**

- Access control readers: 2
- Supervised input points: 2
- Relay controlled outputs: 4 (2 wet/dry selectable)
- Temperature points: 1

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