PICA8 WHITE BOX SDN®

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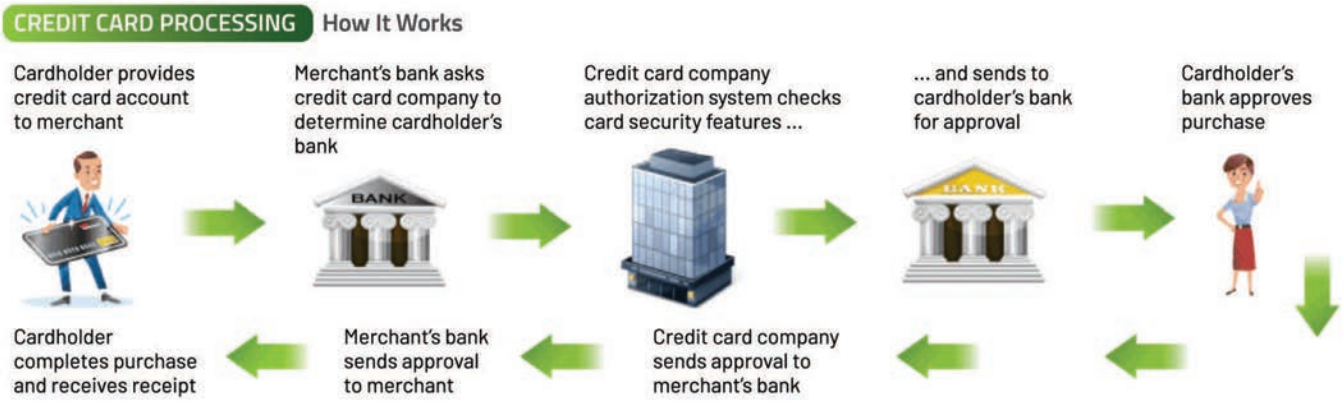
Switch-Based Point of Sale Security Solution Brief

Don't let this happen to your retail operation:

On October 25, 2017 Chipotle Mexican Grill (CMG) announced that its 3Q 2017 Earnings, which were forecast at $1.63 / share, came in at 69 cents. It had to take a 64-cent charge against earnings caused by a cybersecurity attack that hit most Chipotle restaurants in the first quarter, allowing hackers to steal credit card information from customers. The company first acknowledged the breach on April 25.

The stock lost over $1B in market cap in a 15%, $47 / share one day plummet that followed the earnings report:

Point of Sale transaction authorization traffic should ONLY go to the Merchant Bank



POS transactions are sent from the Merchant's PoS terminal to the Merchant's "Acquiring Bank" server for all credit and debit card transactions. From there, the transaction flows to the "Card Association" (Visa, MC, AMEX, Discover), then to the Cardholder's "Issuing Bank," where the transaction is approved or declined and then back through the Merchant's "Acquiring Bank," the Card Association and ends at the POS terminal where the accept or decline is displayed.

Point of Sale transaction traffic has limited legitimate destinations:

- Local or Networked storage
- Network Operations Messages and Admin access
- Automated Device Operations Systems for software version updates

Threats to PoS Systems

Malicious software can be attached from many sources and are typically written to be "Victim Specific." Malware targeting PoS terminals can be introduced by:

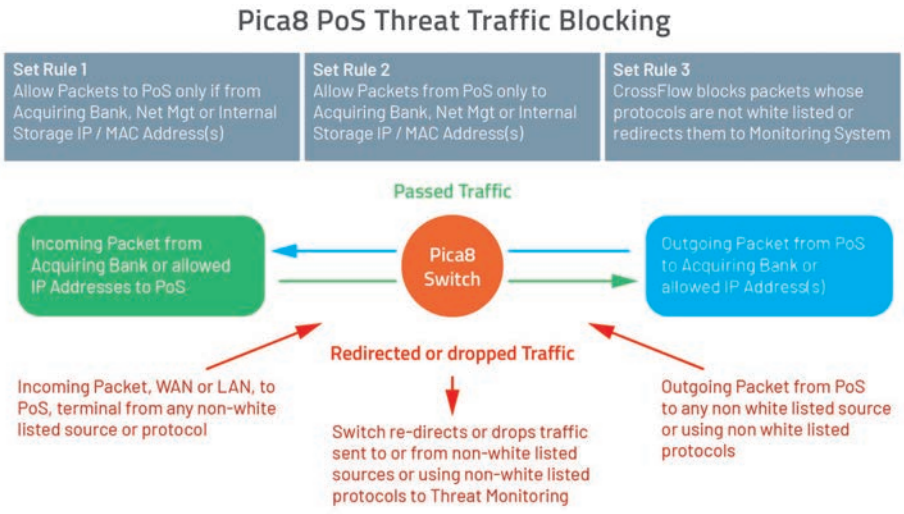
- External parties accessing the WAN using stolen PoS network details
- External parties via the LAN using access coming from low security Wi-Fi or active wired access
- Phishing a company's employee e-mails
- External parties on the LAN using access from low security Wi-Fi or active wired-port access
- Internal company employees on the LAN using access from low security Wi-Fi or active wired port access
- Internal company employees using the PoS processing data center as a software update

The Pica8 PoS Security Solution

In an industry first, Pica8 has developed a unique new SDN flow control plane, known as CrossFlow™ that can be used with traditional L2/L3 services on the same port. It is programmable and can inspect the packet headers, then take action based on the Protocol used in each packet. CrossFlow can be programmed to allow uninterrupted normal L2/L3 packet flow for "White Listed Protocols" and either divert or drop only packets not conforming to the White List. Similarly, the Acquiring Bank's transaction processing servers can use CrossFlow to accomplish the same additional layer of switch-based security. This, combined with Access Control Lists implemented in the Switch silicon, delivers a new, enhanced security layer in each Ethernet switch in a network.

With Crossflow the network provides protection from:

- Outsider malware either externally or Internally inserted from "behind the firewall"
- Insider-inserted malware



With Pica8's CrossFlow™, PoS traffic destined for unauthorized addresses can be easily diverted to security analytics appliances.

This allows operations teams to use the traffic data to analyze intrusion attempts that result in PoS traffic, determine threat mitigations and then update switch processing accordingly.

Manage future threats by blending SDN next-gen capabilities with traditional switches.

By monitoring the diverted traffic from Pica8 switches, SecOps can take full advantage of this new software defined networking insight, combine it with system automation, and then better manage threat mitigation configuration updates. Adding SDN Controllers to corporate Data Centers enables customers to quickly set network switching rules that mitigate threats by configuring PICOS-based switches to automatically deny Intrusion attempts trying to connect to a PoS system and malicious traffic directed at PoS terminals.

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