**Bloom Filters for String Matching**

**Operation Summary**
1. Signatures converted to UDP control packets
2. Control packets sent to the hardware system
3. Bloom Filters and Hash Table programmed
4. Scanning of Internet traffic begins immediately
5. String matches generate alert messages
6. Software controller processes alerts

**The Problem**
Global Velocity, located in St. Louis MO, has an exclusive license to the high-speed network content scanning technology. They are actively commercializing the technology. Markets include governmental agencies, universities, and corporations for network infrastructure protection and intelligence applications.

**Who Cares about String Matching?**
- Network Administrators
- Organizations that use the Internet
- Governments with classified secrets
- Corporations with proprietary information

**Quick Reaction Times are Absolutely Necessary!**
- Virus/Worm applications are a rapid evolving threat
- Quick reaction times are absolutely necessary
- How do you quickly change search criteria?
- How do you efficiently scan and filter tens of thousands of strings?

**The Solution**
A device has been developed at Washington University that:
- Scans for and blocks Internet traffic containing offending signatures
- Begins searching for over 10,000 variable length strings within milliseconds of coming online
- Generates alert messages to notify a network administrator
- Utilizes technology that is compatible with local and wide area networks
- Can be used to protect sensitive information
- Filters latest virus / worm applications

**Global Velocity**
Michael Attig, Sarang Dharmapurikar, and John W. Lockwood:

**Commericalization**

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**Step 1:** Program signatures into hardware via UDP control packets
**Step 2:** Program Bloom filters and Hash Table to detect signatures
**Step 3:** Scan bidirectional Internet traffic passing through system
**Step 4:** Act on alert messages

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