

# SDN in 1980s

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# THE 1980s



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Those who cannot  
remember the past  
are condemned to  
repeat it

# HUSKY HUNTER

The mightiest of micros



**Practical,** completely self contained hand-held portable microcomputer. 8 lines of 40 characters LCD screen with full graphics capability. **Big memory,** 208K bytes of RAM. 48K operating system ROM. Huge memory capacity for disk emulation. **Rugged** heavy duty metal case and sealed keyboard for use anywhere. **Dependable** fail-safe battery system, choice of rechargeable or alkaline cells.

**Convenient,** smaller than any other CP/M micro (216mm x 156mm x 32mm). **Light,** only 1150g, including batteries. **Compatible** with thousands of CP/M-based programs. Communicates with most mainframe computers. **Programmable** extended Basic interpreter with many advanced features. International service and support through manufacturer and agents worldwide.

CP/M is a trademark of Digital Research, Inc.

MyCalcDB

# SDR, SDN

# OpenFlow, P4

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# P4 goals

reconfigurability  
protocol independence  
target independence

\*P4 and beyond - unpublished - 2016

## P4 issues

- Stateless processing - (no stateful firewalls)
- Traffic Management
- Multicast -
- Load-balancing/output port selection

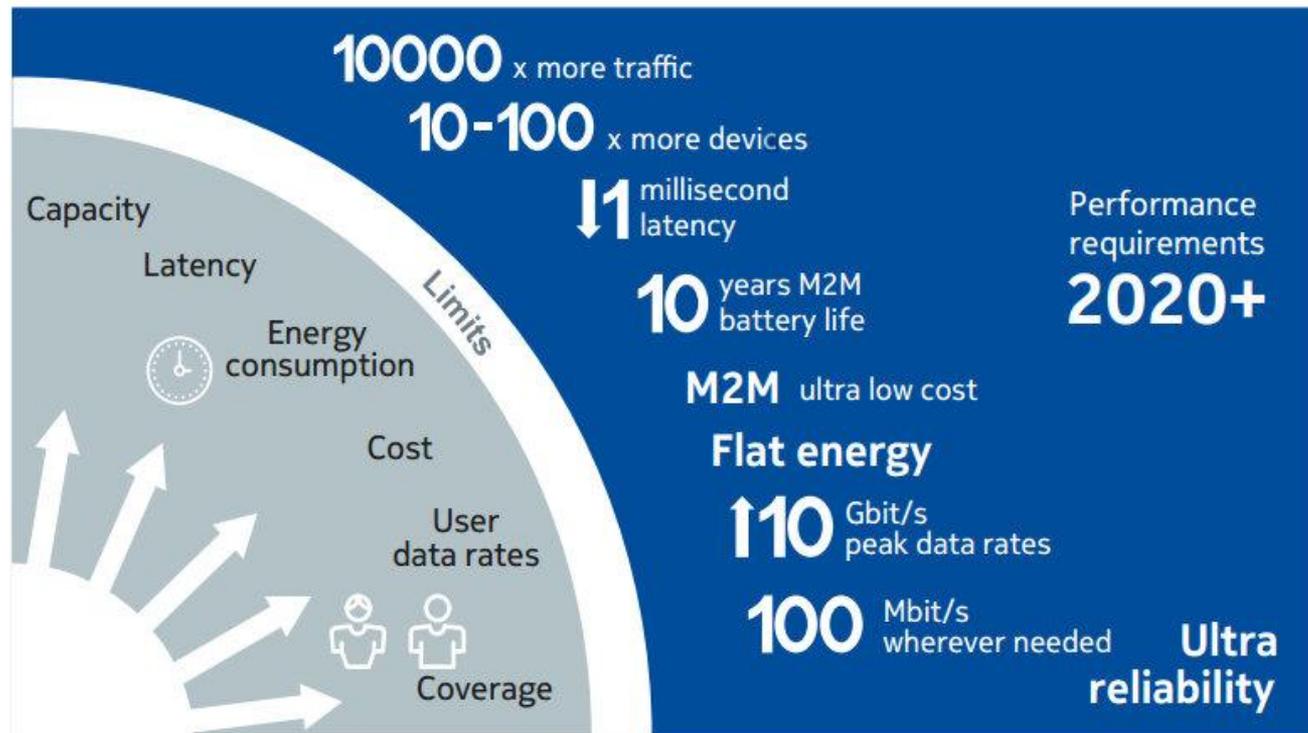
First P4 paper states: “....., several aspects of a switch remain undefined (e.g., congestion-control primitives, queuing disciplines, traffic monitoring)”

Latest P4 version - ; P4 language specification make no mention of these topics at all (but calls out to a broken link for a ‘Portable Switch Architecture’...);

A later, 2016 paper from the same authors (“PISCES: A Programmable, Protocol-Independent Software Switch”) doesn’t mention any of these topics, other than ‘Users will want to see how queues are evolving, latencies are varying,’

Multicast - packet cloning capability for multicast is an essential hardware acceleration function if multicast functions are required. OpenFlow addressed this requirement explicitly through special logical port types and with the ‘group table’ concept which allows multiple output actions to be concisely combined and managed. P4 does not touch on the topic at all.

Load-balancing/output port selection - OpenFlow introduced rudimentary solutions to enable packets to be dynamically distributed over a range of ports, P4 loses this...



# Thanks for listening!

## Questions?

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