CLAIMS

What is claimed is:

1. A method, comprising:

under control of one or more processors configured with executable instructions:

listening for a plurality of differently modulated signals;

detecting a preamble associated with one of the plurality of differently modulated signals, wherein the detecting is performed in a first state in a state machine and the detecting comprises parallel processing of a plurality of preamble detection processes;

identifying a protocol indicated by the preamble; and

demodulating a received packet according to the protocol,

wherein the demodulating is performed in a second state in the state machine and the demodulating comprises serial processing by a packet demodulator.

2. The method as recited in claim 1, wherein:

demodulating the received packet comprises configuring settings of a software-defined radio consistently with the protocol.

3. The method as recited in claim 1, wherein listening for the plurality of differently modulated signals comprises:

listening on a same channel center frequency for all of the differently modulated signals; and

listening over a bandwidth as wide as a widest bandwidth used by any of the differently modulated signals.

4. The method as recited in claim 1, wherein listening for the plurality of differently modulated signals comprises:

frequency hopping over a plurality of channels defined within a bandwidth and listening for the plurality of differently modulated signals at each hop; and

using a same frequency hopping pattern for all of a plurality of protocols.

5. A method, comprising:

under control of one or more processors configured with executable instructions:

receiving a preamble defined by a radio frequency (RF) signal, the receiving performed by a plurality of preamble detection processes operating in parallel;

detecting the preamble with one of the plurality of preamble detection processes;

associating the detected preamble with a protocol;

advancing from a first state in a state machine, associated with parallel processing of the plurality of preamble detection processes, to a second state in the state machine, associated with serial processing, in response to associating the detected preamble with the protocol;

configuring a software-defined radio in accordance with the protocol for the serial processing;

receiving a packet using the software-defined radio; and

demodulating the received packet according to the protocol.

6. The method of claim 5, wherein the plurality of preamble detection processes is associated with a plurality of protocols, respectively.

7. The method of claim 5, wherein configuring the software-defined radio comprises:

configuring filters and demodulators of the software-defined radio using the protocol.

8. The method of claim 5, wherein configuring the software-defined radio comprises:

configuring settings of the software-defined radio, the settings configuring mixers, filters and amplifiers, as indicated for processing of modulated data according to the protocol.

9. The method of claim 5, wherein:

receiving the preamble is performed in a parallel processing mode by a hardware device; and

demodulating the received packet is performed in a serial processing mode by the software defined radio.

10. The method of claim 5, wherein the plurality of preamble detection processes are associated with preambles previously heard or expected to be heard.

11. A multiple protocol receiver, comprising:

a processor;

a memory in communication with the processor;

an antenna to receive signals;

a radio frequency (RF) front end, in communication with the antenna;

a plurality of different preamble detection processes, configured to operate on the processor and receive information from the RF front end, each of the plurality of preamble detection processes associated with one of a plurality of different preambles and one of a plurality of different protocols; and

a plurality of different packet demodulators, wherein each packet demodulator of the plurality of different packet demodulators is associated with the plurality of different protocols preamble detection processes, and wherein successful detection of a preamble by a respective preamble detection process of the plurality of different preamble detection processes results in execution of an associated packet demodulator.

12. The multiple protocol receiver of claim 11, wherein the plurality of different preamble detection processes is configured for parallel processing on the processor.

13. The multiple protocol receiver of claim 11, wherein the multiple protocol receiver is configured for:

switching from parallel processing of the plurality of different preamble detection processes to serial demodulation of a packet with the associated packet demodulator, wherein:

the switching is performed in response to detection of the preamble; and

preamble detection is performed in a parallel processing mode, and data demodulation is performed in a serial mode according to the protocol, and both are performed on a same packet.

14. The multiple protocol receiver of claim 11, wherein the plurality of different preamble detection processes is configured to:

listen for preambles from multiple generations of nodes, the multiple generations of nodes having multiple different modulation types.

15. The multiple protocol receiver of claim 11, additionally comprising a state machine defined in the memory as computer executable instructions, which when executed is configured to perform a method comprising:

executing the plurality of different preamble detection processes in a parallel processing mode;

switching from the parallel processing mode to a serial processing mode in response to detection of the preamble; and

demodulating the packet in the serial processing mode.

16. The multiple protocol receiver of claim 11, additionally comprising:

a software-defined radio, having filters and demodulators configured in accord with the protocol.

17. A multiple protocol receiver, comprising:

an antenna;

a radio, in communication with the antenna, to listen for a plurality of differently modulated signals; and

one or more hardware integrated circuits for:

detecting a preamble associated with one of the plurality of differently modulated signals received by the radio by parallel operation of a plurality of preamble detection processes, each configured to listen for one of the plurality of differently modulated signals, respectively;

identifying a protocol indicated by the preamble and

demodulating a packet according to the protocol.

18. The multiple protocol receiver of claim 17, wherein:

the detecting of the preamble is performed by parallel processing in a first state in a state machine; and

the demodulating of the packet is performed by serial processing in a second state in the state machine.

19. The multiple protocol receiver of claim 17, wherein the radio is configured for:

listening on a same channel center frequency for all of the differently modulated signals; and

listening over a bandwidth as wide as a widest bandwidth used by any of the differently modulated signals.

20. The multiple protocol receiver of claim 17, wherein the radio is configured for:

frequency hopping over a plurality of channels defined within a bandwidth and listening for the plurality of differently modulated signals at each hop; and

using a same frequency hopping pattern for all of a plurality of protocols.

21. The multiple protocol receiver of claim 17, wherein the one or more hardware integrated circuits are configured for:

advancing from a first state in a state machine to a second state in the state machine in response to detecting the preamble and identifying the protocol;

wherein the first state comprises parallel processing and the second state comprises serial processing.

CLAIMS

What is claimed is:

1. One or more computer-readable media storing computer-executable instructions that, when executed, cause one or more processors to perform acts comprising:

under control of one or more processors configured with executable instructions:

listening for a plurality of differently modulated signals;

detecting a preamble associated with one of the plurality of differently modulated signals;

identifying a protocol indicated by the preamble; and

demodulating a received packet according to the protocol.

2. One or more computer-readable media as recited in claim 1, wherein:

listening for the plurality of differently modulated signals comprises listening with a plurality of preamble detection processes running in parallel; and

demodulating the received packet comprises configuring a software-defined radio consistently with the protocol.

3. One or more computer-readable media as recited in claim 1, wherein:

detecting the preamble is performed in a first state in a state machine, comprising parallel processing of a plurality of preamble detection processes; and

demodulating the received packet is performed in a second state in the state machine comprising serial processing of a packet demodulator.

4. One or more computer-readable media as recited in claim 1, wherein:

listening for the plurality of differently modulated signals is performed using parallel processing of a plurality of preamble detection processes; and

demodulating the received packet is performed using serial processing.

5. One or more computer-readable media as recited in claim 1, wherein listening for the plurality of differently modulated signals comprises:

listening on a same channel center frequency for all of the differently modulated signal; and

listening over a bandwidth as narrow as a widest bandwidth used by any of the differently modulated signals.

6. One or more computer-readable media as recited in claim 1, wherein listening for the plurality of differently modulated signals comprises:

frequency hopping over a plurality of channels defined within a bandwidth and listening for the plurality of differently modulated signals at each hop; and

using a same frequency hopping pattern for all of a plurality of protocols.

7. A method, comprising:

listening for a preamble defined by a radio frequency (RF) signal, the listening performed by a plurality preamble detection processes operating in parallel;

detecting a preamble with one of the plurality of preamble detection processes;

associating the detected preamble with a protocol;

configuring a software-defined radio in accordance with the protocol;

receiving a packet using the software-defined radio; and

demodulating the received packet according to the protocol.

8. The method of claim 7, additionally comprising:

advancing from a first state in a state machine to a second state in the state machine in response to associating the detected preamble with the protocol; and

switching from parallel processing of the plurality of preamble detection processes, in the first state, to serial processing of the received packet, in the second state.

9. The method of claim 7, wherein the plurality of preamble detection processes is associated with a plurality of protocols, respectively.

10. The method of claim 7, wherein configuring the software-defined radio comprises:

configuring filters and demodulators of the software-defined radio using the protocol.

11. The method of claim 7, wherein configuring the software-defined radio comprises:

reconfiguring the software-defined radio from parallel processing of a plurality of differently modulated signals to serial processing of modulated data according to the protocol.

12. A multiple protocol receiver, comprising:

a processor;

a memory in communication with the processor;

an antenna to receive signals;

a radio frequency (RF) front end, in communication with the antenna;

a plurality of preamble detection processes, configured to operate on the processor and receive information from the RF front end, each of the plurality of preamble detection processes associated with one of a plurality of preambles and one of a plurality of protocols; and

a packet demodulator to demodulate a packet according to a protocol associated with a preamble detection process, from among the plurality of preamble detection processes, in response to successful detection of a preamble.

13. The multiple protocol receiver of claim 12, wherein the plurality of preamble detection processes is configured for parallel processing on the processor.

14. The multiple protocol receiver of claim 12, wherein the multiple protocol receiver is configured for:

switching from parallel processing of the plurality of preamble detection processes to serial demodulation of the packet with the packet demodulator,

wherein:

the switching is performed in response to detection of a preamble; and

preamble detection is performed in a parallel processing mode, and data demodulation is performed in a serial mode according to the protocol, and both are performed on a same packet.

15. The multiple protocol receiver of claim 12, wherein the plurality of preamble detection processes is configured to:

listen for preambles from multiple generations of nodes, the multiple generations of nodes having multiple different modulation types.