
dpkt
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dpkt is a python module for fast, simple packet creation / parsing, with definitions for the basic TCP/IP protocols

1.1 Installation

DKPT is now available directly from pypi :)

1.1.1 Install the Code

```
pip install dpkt
```

1.1.2 Checkout the Code

```
git clone https://github.com/kbandla/dpkt.git
```

1.2 Examples

1.2.1 Examples in dpkt/examples

Print Packets Example

This example uses DPKT to read in a pcap file and print out the contents of the packets This example is focused on the fields in the Ethernet Frame and IP packet

Code Excerpt

```
# For each packet in the pcap process the contents  
for timestamp, buf in pcap:  
  
    # Print out the timestamp in UTC
```

```

print 'Timestamp: ', str(datetime.datetime.utcnow().timestamp(timestamp))

# Unpack the Ethernet frame (mac src/dst, ethertype)
eth = dpkt.ethernet.Ethernet(buf)
print 'Ethernet Frame: ', mac_addr(eth.src), mac_addr(eth.dst), eth.type

# Make sure the Ethernet frame contains an IP packet
if not isinstance(eth.data, dpkt.ip.IP):
    print 'Non IP Packet type not supported %s\n' % eth.data.__class__.__name__
    continue

# Now unpack the data within the Ethernet frame (the IP packet)
# Pulling out src, dst, length, fragment info, TTL, and Protocol
ip = eth.data

# Pull out fragment information (flags and offset all packed into off field, so
↪use bitmasks)
do_not_fragment = bool(ip.off & dpkt.ip.IP_DF)
more_fragments = bool(ip.off & dpkt.ip.IP_MF)
fragment_offset = ip.off & dpkt.ip.IP_OFFMASK

# Print out the info
print 'IP: %s -> %s (len=%d ttl=%d DF=%d MF=%d offset=%d)\n' % \
      (inet_to_str(ip.src), inet_to_str(ip.dst), ip.len, ip.ttl, do_not_fragment,
↪more_fragments, fragment_offset)

```

Example Output

```

Timestamp: 2004-05-13 10:17:07.311224
Ethernet Frame: 00:00:01:00:00:00 fe:ff:20:00:01:00 2048
IP: 145.254.160.237 -> 65.208.228.223 (len=48 ttl=128 DF=1 MF=0 offset=0)

Timestamp: 2004-05-13 10:17:08.222534
Ethernet Frame: fe:ff:20:00:01:00 00:00:01:00:00:00 2048
IP: 65.208.228.223 -> 145.254.160.237 (len=48 ttl=47 DF=1 MF=0 offset=0)

...

```

dpkt/examples/print_packets.py Use DPKT to read in a pcap file and print out the contents of the packets This example is focused on the fields in the Ethernet Frame and IP packet

`examples.print_packets.mac_addr(address)`

Convert a MAC address to a readable/printable string

Parameters `address` (*str*) – a MAC address in hex form (e.g. ‘’)

Returns Printable/readable MAC address

Return type `str`

`examples.print_packets.inet_to_str(inet)`

Convert inet object to a string

Parameters `inet` (*inet struct*) – inet network address

Returns Printable/readable IP address

Return type `str`

`examples.print_packets.print_packets(pcap)`

Print out information about each packet in a pcap

Parameters `pcap` – dpkt pcap reader object (dpkt.pcap.Reader)

`examples.print_packets.test()`
Open up a test pcap file and print out the packets

Print ICMP Example

This example expands on the `print_packets` example. It checks for ICMP packets and displays the ICMP contents.

Code Excerpt

```
# For each packet in the pcap process the contents
for timestamp, buf in pcap:

    # Unpack the Ethernet frame (mac src/dst, ethertype)
    eth = dpkt.ethernet.Ethernet(buf)

    # Make sure the Ethernet data contains an IP packet
    if not isinstance(eth.data, dpkt.ip.IP):
        print 'Non IP Packet type not supported %s\n' % eth.data.__class__.__name__
        continue

    # Now grab the data within the Ethernet frame (the IP packet)
    ip = eth.data

    # Now check if this is an ICMP packet
    if isinstance(ip.data, dpkt.icmp.ICMP):
        icmp = ip.data

        # Pull out fragment information (flags and offset all packed into off field,
        ↪so use bitmasks)
        do_not_fragment = bool(ip.off & dpkt.ip.IP_DF)
        more_fragments = bool(ip.off & dpkt.ip.IP_MF)
        fragment_offset = ip.off & dpkt.ip.IP_OFFMASK

        # Print out the info
        print 'Timestamp: ', str(datetime.datetime.utcnow().timestamp(timestamp))
        print 'Ethernet Frame: ', mac_addr(eth.src), mac_addr(eth.dst), eth.type
        print 'IP: %s -> %s (len=%d ttl=%d DF=%d MF=%d offset=%d)' % \
            (inet_to_str(ip.src), inet_to_str(ip.dst), ip.len, ip.ttl, do_not_
        ↪fragment, more_fragments, fragment_offset)
        print 'ICMP: type:%d code:%d checksum:%d data: %s\n' % (icmp.type, icmp.code,
        ↪icmp.sum, repr(icmp.data))
```

Example Output

```
Timestamp: 2013-05-30 22:45:17.283187
Ethernet Frame: 60:33:4b:13:c5:58 02:1a:11:f0:c8:3b 2048
IP: 192.168.43.9 -> 8.8.8.8 (len=84 ttl=64 DF=0 MF=0 offset=0)
ICMP: type:8 code:0 checksum:48051 data: Echo(id=55099, data='Q\xa7\xd6)
↪\x00\x04Q\xe4\x08\t\n\x0b\x0c\r\x0e\x0f\x10\x11\x12\x13\x14\x15\x16\x17\x18\x19\x1a\x1b\x1c\x1d\x1e
↪!"#$$%&\'()*+,-./01234567')

Timestamp: 2013-05-30 22:45:17.775391
Ethernet Frame: 02:1a:11:f0:c8:3b 60:33:4b:13:c5:58 2048
IP: 8.8.8.8 -> 192.168.43.9 (len=84 ttl=40 DF=0 MF=0 offset=0)
ICMP: type:0 code:0 checksum:50099 data: Echo(id=55099, data='Q\xa7\xd6)
↪\x00\x04Q\xe4\x08\t\n\x0b\x0c\r\x0e\x0f\x10\x11\x12\x13\x14\x15\x16\x17\x18\x19\x1a\x1b\x1c\x1d\x1e
↪!"#$$%&\'()*+,-./01234567')
```

```
...
```

dpkt/examples/print_icmp.py This example expands on the `print_packets` example. It checks for ICMP packets and displays the ICMP contents.

```
examples.print_icmp.mac_addr (address)
```

Convert a MAC address to a readable/printable string

Parameters `address` (*str*) – a MAC address in hex form (e.g. ‘’)

Returns Printable/readable MAC address

Return type `str`

```
examples.print_icmp.inet_to_str (inet)
```

Convert inet object to a string

Parameters `inet` (*inet struct*) – inet network address

Returns Printable/readable IP address

Return type `str`

```
examples.print_icmp.print_icmp (pcap)
```

Print out information about each packet in a pcap

Parameters `pcap` – dpkt pcap reader object (`dpkt.pcap.Reader`)

```
examples.print_icmp.test ()
```

Open up a test pcap file and print out the packets

Print HTTP Requests Example

This example expands on the `print_packets` example. It checks for HTTP request headers and displays their contents.

NOTE: We are not reconstructing ‘flows’ so the request (and response if you tried to parse it) will only parse correctly if they fit within a single packet. Requests can often fit in a single packet but Responses almost never will. For proper reconstruction of flows you may want to look at other projects that use DPKT (<http://chains.readthedocs.io> and others)

Code Excerpt

```
# For each packet in the pcap process the contents
for timestamp, buf in pcap:

    # Unpack the Ethernet frame (mac src/dst, ethertype)
    eth = dpkt.ethernet.Ethernet(buf)

    # Make sure the Ethernet data contains an IP packet
    if not isinstance(eth.data, dpkt.ip.IP):
        print 'Non IP Packet type not supported %s\n' % eth.data.__class__.__name__
        continue

    # Now grab the data within the Ethernet frame (the IP packet)
    ip = eth.data

    # Check for TCP in the transport layer
    if isinstance(ip.data, dpkt.tcp.TCP):

        # Set the TCP data
        tcp = ip.data
```

```

# Now see if we can parse the contents as a HTTP request
try:
    request = dpkt.http.Request(tcp.data)
except (dpkt.dpkt.NeedData, dpkt.dpkt.UnpackError):
    continue

# Pull out fragment information (flags and offset all packed into off field,
↳so use bitmasks)
do_not_fragment = bool(ip.off & dpkt.ip.IP_DF)
more_fragments = bool(ip.off & dpkt.ip.IP_MF)
fragment_offset = ip.off & dpkt.ip.IP_OFFMASK

# Print out the info
print 'Timestamp: ', str(datetime.datetime.utcnow().timestamp())
print 'Ethernet Frame: ', mac_addr(eth.src), mac_addr(eth.dst), eth.type
print 'IP: %s -> %s (len=%d ttl=%d DF=%d MF=%d offset=%d)' % \
    (inet_to_str(ip.src), inet_to_str(ip.dst), ip.len, ip.ttl, do_not_
↳fragment, more_fragments, fragment_offset)
print 'HTTP request: %s\n' % repr(request)

```

Example Output

```

Timestamp: 2004-05-13 10:17:08.222534
Ethernet Frame: 00:00:01:00:00:00 fe:ff:20:00:01:00 2048
IP: 145.254.160.237 -> 65.208.228.223 (len=519 ttl=128 DF=1 MF=0 offset=0)
HTTP request: Request(body='', uri='/download.html', headers={'accept-language': 'en-
↳us,en;q=0.5', 'accept-encoding': 'gzip,deflate', 'connection': 'keep-alive', 'keep-
↳alive': '300', 'accept': 'text/xml,application/xml,application/xhtml+xml,text/html;
↳q=0.9,text/plain;q=0.8,image/png,image/jpeg,image/gif;q=0.2,*/*;q=0.1', 'user-agent
↳': 'Mozilla/5.0 (Windows; U; Windows NT 5.1; en-US; rv:1.6) Gecko/20040113',
↳'accept-charset': 'ISO-8859-1,utf-8;q=0.7,*;q=0.7', 'host': 'www.ethereal.com',
↳'referer': 'http://www.ethereal.com/development.html'}, version='1.1', data='',
↳method='GET')

Timestamp: 2004-05-13 10:17:10.295515
Ethernet Frame: 00:00:01:00:00:00 fe:ff:20:00:01:00 2048
IP: 145.254.160.237 -> 216.239.59.99 (len=761 ttl=128 DF=1 MF=0 offset=0)
HTTP request: Request(body='', uri='/pagead/ads?client=ca-pub-2309191948673629&
↳random=1084443430285&lmt=1082467020&format=468x60_as&output=html&url=http%3A%2F
↳%2Fwww.ethereal.com%2Fdownload.html&color_bg=FFFFFF&color_text=333333&color_
↳link=000000&color_url=666633&color_border=666633', headers={'accept-language': 'en-
↳us,en;q=0.5', 'accept-encoding': 'gzip,deflate', 'connection': 'keep-alive', 'keep-
↳alive': '300', 'accept': 'text/xml,application/xml,application/xhtml+xml,text/html;
↳q=0.9,text/plain;q=0.8,image/png,image/jpeg,image/gif;q=0.2,*/*;q=0.1', 'user-agent
↳': 'Mozilla/5.0 (Windows; U; Windows NT 5.1; en-US; rv:1.6) Gecko/20040113',
↳'accept-charset': 'ISO-8859-1,utf-8;q=0.7,*;q=0.7', 'host': 'pagead2.
↳googlesyndication.com', 'referer': 'http://www.ethereal.com/download.html'},
↳version='1.1', data='', method='GET')

...

```

dpkt/examples/print_http_requests.py This example expands on the `print_packets` example. It checks for HTTP request headers and displays their contents. NOTE: We are not reconstructing ‘flows’ so the request (and response if you tried to parse it) will only

parse correctly if they fit within a single packet. Requests can often fit in a single packet but Responses almost never will. For proper reconstruction of flows you may want to look at other projects that use

DPKT (<http://chains.readthedocs.io> and others)

`examples.print_http_requests.mac_addr(address)`

Convert a MAC address to a readable/printable string

Parameters `address` (*str*) – a MAC address in hex form (e.g. ‘’)

Returns Printable/readable MAC address

Return type `str`

`examples.print_http_requests.inet_to_str(inet)`

Convert inet object to a string

Parameters `inet` (*inet struct*) – inet network address

Returns Printable/readable IP address

Return type `str`

`examples.print_http_requests.print_http_requests(pcap)`

Print out information about each packet in a pcap

Parameters `pcap` – dpkt pcap reader object (`dpkt.pcap.Reader`)

`examples.print_http_requests.test()`

Open up a test pcap file and print out the packets

1.2.2 Jon Oberheide’s Examples

[@jonoberheide’s](<https://twitter.com/jonoberheide>) old examples still apply:

- dpkt Tutorial #1: ICMP Echo
- dpkt Tutorial #2: Parsing a PCAP File
- dpkt Tutorial #3: dns spoofing
- dpkt Tutorial #4: AS Paths from MRT/BGP

1.2.3 Jeff Silverman Docs/Code

Jeff Silverman has some code and documentation.

2.1 API Reference

The dpkt API reference section is currently a work in progress, please have patience as we fill in and improve the documentation.

dpkt Modules

2.1.1 dpkt.ah module

Authentication Header.

```
class dpkt.ah.AH(*args, **kwargs)
```

```
    Bases: dpkt.dpkt.Packet
```

```
    Authentication Header.
```

```
    TODO: Longer class information. . . .
```

```
    __hdr__
```

```
        Header fields of AH.
```

```
    auth
```

```
        Authentication body.
```

```
    data
```

```
        Message data.
```

```
    auth = ''
```

```
    unpack (buf)
```

```
    data
```

```
    len
```

```
    nxt
```

rsvd
seq
spi

2.1.2 dpkt.aim module

AOL Instant Messenger.

class dpkt.aim.**FLAP** (*args, **kwargs)

Bases: *dpkt.dpkt.Packet*

Frame Layer Protocol.

See more about the FLAP on https://en.wikipedia.org/wiki/OSCAR_protocol#FLAP_header

__hdr__

Header fields of FLAP.

data

Message data.

unpack (*buf*)

ast

data

len

seq

type

class dpkt.aim.**SNAC** (*args, **kwargs)

Bases: *dpkt.dpkt.Packet*

Simple Network Atomic Communication.

See more about the SNAC on https://en.wikipedia.org/wiki/OSCAR_protocol#SNAC_data

__hdr__

Header fields of SNAC.

data

family

flags

reqid

subtype

dpkt.aim.**tlv** (*buf*)

dpkt.aim.**testAIM** ()

dpkt.aim.**testExceptions** ()

2.1.3 dpkt.aoe module

ATA over Ethernet Protocol.

class dpkt.aoe.**AOE** (*args, **kwargs)

Bases: *dpkt.dpkt.Packet*

ATA over Ethernet Protocol.

See more about the AOE on https://en.wikipedia.org/wiki/ATA_over_Ethernet

__hdr__

Header fields of AOE.

data

Message data.

ver

fl

classmethod set_cmd (cmd, pktclass)

classmethod get_cmd (cmd)

unpack (buf)

pack_hdr ()

cmd

data

err

maj

min

tag

ver_fl

2.1.4 dpkt.aoeata module

ATA over Ethernet ATA command

class dpkt.aoeata.**AOEATA** (*args, **kwargs)

Bases: *dpkt.dpkt.Packet*

ATA over Ethernet ATA command.

See more about the AOEATA on https://en.wikipedia.org/wiki/ATA_over_Ethernet

__hdr__

Header fields of AOEATA.

data

Message data.

aflags

cmdstat

data

errfeat

lba0

lba1

lba2

lba3

lba4

lba5

res

scnt

`dpkt.aoeata.test_aoeata()`

2.1.5 dpkt.aoecfg module

ATA over Ethernet ATA command

class `dpkt.aoecfg.AOECFG(*args, **kwargs)`

Bases: `dpkt.dpkt.Packet`

ATA over Ethernet ATA command.

See more about the AOE on https://en.wikipedia.org/wiki/ATA_over_Ethernet

__hdr__

Header fields of AOECFG.

data

Message data.

aoeccmd

bufcnt

cslen

data

fwver

scnt

`dpkt.aoecfg.test_aoecfg()`

2.1.6 dpkt.arp module

Address Resolution Protocol.

class `dpkt.arp.ARP(*args, **kwargs)`

Bases: `dpkt.dpkt.Packet`

Address Resolution Protocol.

See more about the ARP on https://en.wikipedia.org/wiki/Address_Resolution_Protocol

__hdr__

Header fields of ARP.

data
hln
hrd
op
pln
pro
sha
spa
tha
tpa

2.1.7 dpkt.asn1 module

Abstract Syntax Notation #1.

`dpkt.asn1.utctime(buf)`
 Convert ASN.1 UTCTime string to UTC float.

TODO: Long description here.

Parameters `buf` – A buffer with format “yymnddhmm”

Returns A floating point number, indicates seconds since the Epoch.

`dpkt.asn1.decode(buf)`
 Sleazy ASN.1 decoder.

TODO: Long description here.

Parameters `buf` – A buffer with Sleazy ASN.1 data.

Returns A list of (id, value) tuples from ASN.1 BER/DER encoded buffer.

Raises `UnpackError` – An error occurred the ASN.1 length exceed.

`dpkt.asn1.test_asn1()`

2.1.8 dpkt.bgp module

Border Gateway Protocol.

class `dpkt.bgp.BGP(*args, **kwargs)`

Bases: `dpkt.dpkt.Packet`

Border Gateway Protocol.

BGP is an inter-AS routing protocol. See more about the BGP on https://en.wikipedia.org/wiki/Border_Gateway_Protocol

`__hdr__`

Header fields of BGP.

#TODO

unpack (`buf`)

```
class Open (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    unpack (buf)

class Parameter (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    unpack (buf)

class Authentication (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    code

    data

class Capability (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    unpack (buf)

    code

    data

    len

    data

    len

    type

asn

data

holdtime

identifier

param_len

v

class Update (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    unpack (buf)

class Attribute (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    optional

    transitive

    partial

    extended_length

    unpack (buf)

class Origin (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    data
```

```
type
class ASPath(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    unpack(buf)
class ASPathSegment(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    unpack(buf)
    data
    len
    type
class NextHop(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    data
    ip
class MultiExitDisc(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    data
    value
class LocalPref(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    data
    value
class AtomicAggregate(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    unpack(buf)
class Aggregator(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    asn
    data
    ip
class Communities(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    unpack(buf)
class Community(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    asn
    data
    value
```

```
class ReservedCommunity (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    data
    value

class OriginatorID (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    data
    value

class ClusterList (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    unpack (buf)

class MPReachNLRI (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    unpack (buf)

class SNPA
    Bases: object

    unpack (buf)

    afi
    data
    safi

class MPUnreachNLRI (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    unpack (buf)

    afi
    data
    safi

    data
    flags
    type

class Notification (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    unpack (buf)

    code
    data
    subcode

class Keepalive (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    unpack (buf)
```

```

class RouteRefresh (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    afi
    data
    rsvd
    safi

    data
    len
    marker
    type

class dpkt.bgp.RouteGeneric (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    unpack (buf)

    data
    len

class dpkt.bgp.RouteIPv4 (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    unpack (buf)

    data
    len

class dpkt.bgp.RouteIPv6 (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    unpack (buf)

    data
    len

dpkt.bgp.test_pack ()
dpkt.bgp.test_unpack ()

```

2.1.9 dpkt.cdp module

Cisco Discovery Protocol.

```

class dpkt.cdp.CDP (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

```

Cisco Discovery Protocol.

See more about the BGP on https://en.wikipedia.org/wiki/Cisco_Discovery_Protocol

```

__hdr__

```

Header fields of CDP.

```

#TODO

```

```
class Address (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    unpack (buf)

    alen

    data

    p

    plen

    ptype

class TLV (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    unpack (buf)

    data

    len

    type

unpack (buf)

data

sum

ttl

version
```

2.1.10 dpkt.crc32c module

```
dpkt.crc32c.add (crc, buf)

dpkt.crc32c.done (crc)

dpkt.crc32c.cksum (buf)
    Return computed CRC-32c checksum.

dpkt.crc32c.test_crc32c ()
```

2.1.11 dpkt.decorators module

```
dpkt.decorators.decorator_with_args (decorator_to_enhance)
    This is decorator for decorator. It allows any decorator to get additional arguments

dpkt.decorators.deprecated (*args, **kwargs)

class dpkt.decorators.TestDeprecatedDecorator
    Bases: object

    new_method ()

    old_method (*args, **kwargs)

    deprecated_decorator (*args, **kwargs)

    test_deprecated_decorator ()
```

2.1.12 dpkt.dhcp module

Dynamic Host Configuration Protocol.

```
class dpkt.dhcp.DHCP (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    Dynamic Host Configuration Protocol.

    TODO: Longer class information...

    hdr
        Header fields of DHCP.

    TODO.

    opts = ((53, '\x01'), (55, '2\x03\x01\x06'))

    pack_opts ()
        Return packed options string.

    unpack (buf)

    chaddr
    ciaddr
    data
    file
    flags
    giaddr
    hln
    hops
    hrd
    magic
    op
    secs
    siaddr
    sname
    xid
    yiaddr
```

```
dpkt.dhcp.test_dhcp ()
```

2.1.13 dpkt.diameter module

Diameter.

```
class dpkt.diameter.Diameter (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    Diameter.

    TODO: Longer class information...
```

`__hdr__`
Header fields of Diameter.

`TODO.`

`request_flag`

`proxiable_flag`

`error_flag`

`retransmit_flag`

`unpack (buf)`

`pack_hdr ()`

`app_id`

`cmd`

`data`

`end_id`

`flags`

`hop_id`

`len`

`v`

`class dpkt.diameter.AVP (*args, **kwargs)`

Bases: `dpkt.dpkt.Packet`

`vendor_flag`

`mandatory_flag`

`protected_flag`

`code`

`data`

`flags`

`len`

`unpack (buf)`

`pack_hdr ()`

`dpkt.diameter.test_pack ()`

`dpkt.diameter.test_unpack ()`

2.1.14 dpkt.dns module

Domain Name System.

`dpkt.dns.pack_name (name, off, label_ptrs)`

`dpkt.dns.unpack_name (buf, off)`

```
class dpkt.dns.DNS (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    Domain Name System.

    TODO: Longer class information. ...

    hdr
        Header fields of DNS.

    TODO.

    qr
    opcode
    aa
    tc
    rd
    ra
    zero
    rcode

class Q (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    DNS question.

    unpack (buf)

    cls
    data
    name
    type

class RR (*args, **kwargs)
    Bases: dpkt.dns.Q

    DNS resource record.

    pack_rdata (off, label_ptrs)
    unpack_rdata (buf, off)

    cls
    data
    name
    rdata
    rlen
    ttd
    type

pack_q (buf, q)
    Append packed DNS question and return buf.
```

unpack_q (*buf, off*)
Return DNS question and new offset.

pack_rr (*buf, rr*)
Append packed DNS RR and return buf.

unpack_rr (*buf, off*)
Return DNS RR and new offset.

unpack (*buf*)

an

ar

data

id

ns

op

qd

`dpkt.dns.test_basic()`

`dpkt.dns.test_PTR()`

`dpkt.dns.test_OPT()`

`dpkt.dns.test_pack_name()`

`dpkt.dns.test_random_data()`

`dpkt.dns.test_circular_pointers()`

`dpkt.dns.test_very_long_name()`

`dpkt.dns.test_null_response()`

`dpkt.dns.test_txt_response()`

`dpkt.dns.test_rdata_TXT()`

`dpkt.dns.test_rdata_HINFO()`

`dpkt.dns.test_dns_len()`

2.1.15 dpkt.dpkt module

Simple packet creation and parsing.

exception `dpkt.dpkt.Error`
Bases: `exceptions.Exception`

exception `dpkt.dpkt.UnpackError`
Bases: `dpkt.dpkt.Error`

exception `dpkt.dpkt.NeedData`
Bases: `dpkt.dpkt.UnpackError`

exception `dpkt.dpkt.PackError`
Bases: `dpkt.dpkt.Error`

```
class dpkt.dpkt.Packet (*args, **kwargs)
```

```
Bases: dpkt.dpkt.Temp
```

Base packet class, with metaclass magic to generate members from self.__hdr__.

```
__hdr__
```

Packet header should be defined as a list of (name, structfmt, default) tuples.

```
__byte_order__
```

Byte order, can be set to override the default ('>')

```
Example: >>> class Foo(Packet): ... __hdr__ = (('foo', 'I', 1), ('bar', 'H', 2), ('baz', '4s', 'quux')) ... >>>
foo = Foo(bar=3) >>> foo Foo(bar=3) >>> str(foo) 'quux' >>> foo.bar 3 >>> foo.baz 'quux' >>> foo.foo =
7 >>> foo.baz = 'whee' >>> foo Foo(baz='whee', foo=7, bar=3) >>> Foo('hello, world!') Foo(baz=' wor',
foo=1751477356L, bar=28460, data='ld!')
```

```
pack_hdr ()
```

Return packed header string.

```
pack ()
```

Return packed header + self.data string.

```
unpack (buf)
```

Unpack packet header fields from buf, and set self.data.

```
dpkt.dpkt.hexdump (buf, length=16)
```

Return a hexdump output string of the given buffer.

```
dpkt.dpkt.in_cksum_add (s, buf)
```

```
dpkt.dpkt.in_cksum_done (s)
```

```
dpkt.dpkt.in_cksum (buf)
```

Return computed Internet checksum.

```
dpkt.dpkt.test_utils ()
```

2.1.16 dpkt.dtp module

Dynamic Trunking Protocol.

```
class dpkt.dtp.DTP (*args, **kwargs)
```

```
Bases: dpkt.dpkt.Packet
```

Dynamic Trunking Protocol.

TODO: Longer class information...

```
__hdr__
```

Header fields of DTP.

```
TODO.
```

```
unpack (buf)
```

```
data
```

```
v
```

2.1.17 dpkt.esp module

Encapsulated Security Protocol.

```
class dpkt.esp.ESP (*args, **kwargs)
```

Bases: *dpkt.dpkt.Packet*

Encapsulated Security Protocol.

TODO: Longer class information. . . .

```
__hdr__
```

Header fields of ESP.

```
TODO.
```

```
data
```

```
seq
```

```
spi
```

2.1.18 dpkt.ethernet module

Ethernet II, LLC (802.3+802.2), LLC/SNAP, and Novell raw 802.3, with automatic 802.1q, MPLS, PPPoE, and Cisco ISL decapsulation.

```
dpkt.ethernet.isstr (s)
```

```
class dpkt.ethernet.Ethernet (*args, **kwargs)
```

Bases: *dpkt.dpkt.Packet*

Ethernet.

Ethernet II, LLC (802.3+802.2), LLC/SNAP, and Novell raw 802.3, with automatic 802.1q, MPLS, PPPoE, and Cisco ISL decapsulation.

```
__hdr__
```

Header fields of Ethernet.

```
TODO.
```

```
unpack (buf)
```

```
pack_hdr ()
```

```
classmethod set_type (t, pktclass)
```

```
classmethod get_type (t)
```

```
classmethod get_type_rev (k)
```

```
data
```

```
dst
```

```
src
```

```
type
```

```
class dpkt.ethernet.MPLSlabel (*args, **kwargs)
```

Bases: *dpkt.dpkt.Packet*

A single entry in MPLS label stack

```
unpack (buf)
```

```

    pack_hdr ()
    as_tuple ()
    data
class dpkt.ethernet.VLANtag8021Q (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    IEEE 802.1q VLAN tag
    unpack (buf)
    pack_hdr ()
    as_tuple ()
    data
    type
class dpkt.ethernet.VLANtagISL (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    Cisco Inter-Switch Link VLAN tag
    unpack (buf)
    pack_hdr ()
    da
    data
    hsa
    indx
    len
    res
    sa
    snap
dpkt.ethernet.test_eth ()
dpkt.ethernet.test_eth_init_with_data ()
dpkt.ethernet.test_mpls_label ()
dpkt.ethernet.test_802dot1q_tag ()
dpkt.ethernet.test_isl_tag ()
dpkt.ethernet.test_eth_802dot1q ()
dpkt.ethernet.test_eth_802dot1q_stacked ()
dpkt.ethernet.test_eth_mpls_stacked ()
dpkt.ethernet.test_isl_eth_llc_stp ()
dpkt.ethernet.test_eth_llc_snap_cdp ()
dpkt.ethernet.test_eth_llc_ipx ()
dpkt.ethernet.test_eth_pppoe ()

```

2.1.19 dpkt.gre module

Generic Routing Encapsulation.

```
class dpkt.gre.GRE(*args, **kwargs)
```

Bases: *dpkt.dpkt.Packet*

Generic Routing Encapsulation.

TODO: Longer class information....

```
__hdr__
```

Header fields of GRE.

```
TODO.
```

```
sre = ()
```

```
v
```

```
recur
```

```
class SRE(*args, **kwargs)
```

Bases: *dpkt.dpkt.Packet*

```
unpack(buf)
```

```
data
```

```
family
```

```
len
```

```
off
```

```
opt_fields_fmts()
```

```
unpack(buf)
```

```
data
```

```
flags
```

```
p
```

```
dpkt.gre.test_gre_v1()
```

```
dpkt.gre.test_gre_len()
```

2.1.20 dpkt.gzip module

GNU zip.

```
class dpkt.gzip.GzipExtra(*args, **kwargs)
```

Bases: *dpkt.dpkt.Packet*

```
data
```

```
id
```

```
len
```

```
class dpkt.gzip.Gzip(*args, **kwargs)
```

Bases: *dpkt.dpkt.Packet*

```
unpack(buf)
```

```

pack_hdr ()
compress ()
    Compress self.data.
decompress ()
    Return decompressed payload.
comment
data
extra
filename
flags
magic
method
mtime
os
xflags
class dpkt.gzip.TestGzip
    Bases: object

    This data is created with the gzip command line tool

    classmethod setup_class ()
    test_method ()
    test_flags ()
    test_mtime ()
    test_xflags ()
    test_os ()
    test_filename ()
    test_decompress ()

```

2.1.21 dpkt.h225 module

ITU-T H.225.0 Call Signaling.

```

class dpkt.h225.H225 (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    ITU-T H.225.0 Call Signaling.

    TODO: Longer class information...

    __hdr__
        Header fields of H225.

    TODO.

    unpack (buf)

```

```
class IE(*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    unpack(buf)

    data

    type

    data

    proto

    ref_len
```

```
dpkt.h225.test_pack()
```

```
dpkt.h225.test_unpack()
```

2.1.22 dpkt.hsrp module

Cisco Hot Standby Router Protocol.

```
class dpkt.hsrp.HSRP(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
```

Cisco Hot Standby Router Protocol.

TODO: Longer class information. . . .

```
__hdr__
    Header fields of HSRP.
```

TODO.

auth

data

group

hello

hold

opcode

priority

rsvd

state

version

vip

2.1.23 dpkt.http module

Hypertext Transfer Protocol.

```
dpkt.http.parse_headers(f)
```

Return dict of HTTP headers parsed from a file object.

`dpkt.http.parse_body(f, headers)`
 Return HTTP body parsed from a file object, given HTTP header dict.

class `dpkt.http.Message(*args, **kwargs)`

Bases: `dpkt.dpkt.Packet`

Hypertext Transfer Protocol headers + body.

TODO: Longer class information. . . .

__hdr__

Header fields of HTTP.

TODO.

headers = None

body = None

unpack (*buf*, *is_body_allowed=True*)

pack_hdr ()

class `dpkt.http.Request(*args, **kwargs)`

Bases: `dpkt.http.Message`

Hypertext Transfer Protocol Request.

TODO: Longer class information. . . .

__hdr__

Header fields of HTTP request.

TODO.

unpack (*buf*)

class `dpkt.http.Response(*args, **kwargs)`

Bases: `dpkt.http.Message`

Hypertext Transfer Protocol Response.

TODO: Longer class information. . . .

__hdr__

Header fields of HTTP Response.

TODO.

unpack (*buf*)

`dpkt.http.test_parse_request()`
`dpkt.http.test_format_request()`
`dpkt.http.test_chunked_response()`
`dpkt.http.test_multicookie_response()`
`dpkt.http.test_noreason_response()`
`dpkt.http.test_body_forbidden_response()`
`dpkt.http.test_request_version()`
`dpkt.http.test_invalid_header()`
`dpkt.http.test_gzip_response()`

2.1.24 dpkt.icmp module

Internet Control Message Protocol.

```
class dpkt.icmp.ICMP(*args, **kwargs)
```

Bases: *dpkt.dpkt.Packet*

Internet Control Message Protocol.

TODO: Longer class information. . . .

hdr

Header fields of ICMP.

TODO.

```
class Echo(*args, **kwargs)
```

Bases: *dpkt.dpkt.Packet*

data

id

seq

```
class Quote(*args, **kwargs)
```

Bases: *dpkt.dpkt.Packet*

unpack(buf)

data

pad

```
class Unreach(*args, **kwargs)
```

Bases: *dpkt.icmp.Quote*

data

mtu

pad

```
class Quench(*args, **kwargs)
```

Bases: *dpkt.icmp.Quote*

data

pad

```
class Redirect(*args, **kwargs)
```

Bases: *dpkt.icmp.Quote*

data

gw

```
class ParamProbe(*args, **kwargs)
```

Bases: *dpkt.icmp.Quote*

data

pad1

pad2

ptr

```

class TimeExceed(*args, **kwargs)
    Bases: dpkt.icmp.Quote
        data
        pad
unpack(buf)
code
data
sum
type

```

```
dpkt.icmp.test_icmp()
```

2.1.25 dpkt.icmp6 module

Internet Control Message Protocol for IPv6.

```

class dpkt.icmp6.ICMP6(*args, **kwargs)
    Bases: dpkt.dpkt.Packet

```

Internet Control Message Protocol for IPv6.

TODO: Longer class information...

```

__hdr__
    Header fields of ICMPv6.

```

TODO.

```

class Error(*args, **kwargs)
    Bases: dpkt.dpkt.Packet

```

```
unpack(buf)
```

```
data
```

```
pad
```

```

class Unreach(*args, **kwargs)
    Bases: dpkt.icmp6.Error

```

```
data
```

```
pad
```

```

class TooBig(*args, **kwargs)
    Bases: dpkt.icmp6.Error

```

```
data
```

```
mtu
```

```

class TimeExceed(*args, **kwargs)
    Bases: dpkt.icmp6.Error

```

```
data
```

```
pad
```

```

class ParamProb(*args, **kwargs)
    Bases: dpkt.icmp6.Error

```

```
    data
    ptr
class Echo (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    data
    id
    seq
unpack (buf)
code
data
sum
type
```

2.1.26 dpkt.ieee80211 module

IEEE 802.11.

```
class dpkt.ieee80211.IEEE80211 (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    IEEE 802.11.
    TODO: Longer class information...
    __hdr__
        Header fields of IEEE802.11.
    TODO.
    version
    type
    subtype
    to_ds
    from_ds
    more_frag
    retry
    pwr_mgt
    more_data
    wep
    order
    unpack_ies (buf)
class Capability (field)
    Bases: object
    unpack (buf)
```

```
class BlockAckReq (*args, **kwargs)
```

```
    Bases: dpkt.dpkt.Packet
```

```
    ctl
```

```
    data
```

```
    dst
```

```
    seq
```

```
    src
```

```
class BlockAck (*args, **kwargs)
```

```
    Bases: dpkt.dpkt.Packet
```

```
    compressed
```

```
    ack_policy
```

```
    multi_tid
```

```
    tid
```

```
    unpack (buf)
```

```
    ctl
```

```
    data
```

```
    dst
```

```
    seq
```

```
    src
```

```
class RTS (*args, **kwargs)
```

```
    Bases: dpkt.dpkt.Packet
```

```
    data
```

```
    dst
```

```
    src
```

```
class CTS (*args, **kwargs)
```

```
    Bases: dpkt.dpkt.Packet
```

```
    data
```

```
    dst
```

```
class ACK (*args, **kwargs)
```

```
    Bases: dpkt.dpkt.Packet
```

```
    data
```

```
    dst
```

```
class CFEnd (*args, **kwargs)
```

```
    Bases: dpkt.dpkt.Packet
```

```
    data
```

```
    dst
```

```
    src
```

```
class MGMT_Frame (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    bssid
    data
    dst
    frag_seq
    src

class Beacon (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    capability
    data
    interval
    timestamp

class Disassoc (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    data
    reason

class Assoc_Req (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    capability
    data
    interval

class Assoc_Resp (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    aid
    capability
    data
    status

class Reassoc_Req (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    capability
    current_ap
    data
    interval

class Auth (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    algorithm
    auth_seq
```

```
    data
class Deauth (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    data
    reason
class Action (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    unpack(buf)
    category
    code
    data
class BlockAckActionRequest (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    data
    dialog
    parameters
    starting_seq
    timeout
class BlockAckActionResponse (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    data
    dialog
    parameters
    status_code
    timeout
class Data (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    bssid
    data
    dst
    frag_seq
    src
class DataFromDS (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    bssid
    data
    dst
    frag_seq
```

```
    src
class DataToDS (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    bssid
    data
    dst
    frag_seq
    src
class DataInterDS (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    da
    data
    dst
    frag_seq
    sa
    src
class QoS_Data (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    control
    data
class IE (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    unpack (buf)
    data
    id
    len
class FH (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    data
    hopindex
    hoppattern
    hopset
    id
    len
    tu
class DS (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    ch
```



```
    data
    id
    len
class CF(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    count
    data
    dur
    id
    len
    max
    period
data
duration
framectl
class TIM(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    count
    ctrl
    data
    id
    len
    period
    unpack(buf)
class IBSS(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    atim
    data
    id
    len

dpkt.ieee80211.test_802211_ack()
dpkt.ieee80211.test_80211_beacon()
dpkt.ieee80211.test_80211_data()
dpkt.ieee80211.test_80211_data_qos()
dpkt.ieee80211.test_bug()
dpkt.ieee80211.test_data_ds()
dpkt.ieee80211.test_compressed_block_ack()
```

```
dpkt.ieee80211.test_action_block_ack_request()  
dpkt.ieee80211.test_action_block_ack_response()
```

2.1.27 dpkt.igmp module

Internet Group Management Protocol.

```
class dpkt.igmp.IGMP(*args, **kwargs)
```

Bases: *dpkt.dpkt.Packet*

Internet Group Management Protocol.

TODO: Longer class information...

```
__hdr__
```

Header fields of IGMP.

```
TODO.
```

```
data
```

```
group
```

```
maxresp
```

```
sum
```

```
type
```

2.1.28 dpkt.ip module

Internet Protocol.

```
class dpkt.ip.IP(*args, **kwargs)
```

Bases: *dpkt.dpkt.Packet*

Internet Protocol.

TODO: Longer class information...

```
__hdr__
```

Header fields of IP.

```
TODO.
```

```
opts = ''
```

```
len
```

```
v
```

```
h1
```

```
rf
```

```
df
```

```
mf
```

```
offset
```

```
unpack(buf)
```

```
classmethod set_proto(p, pktclass)
```

```

    classmethod get_proto(p)
    data
    dst
    id
    off
    p
    src
    sum
    tos
    ttl
dpkt.ip.test_ip()
dpkt.ip.test_hl()
dpkt.ip.test_opt()
dpkt.ip.test_zerolen()
dpkt.ip.test_constructor()
dpkt.ip.test_frag()

```

2.1.29 dpkt.ip6 module

Internet Protocol, version 6.

```

class dpkt.ip6.IP6(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    Internet Protocol, version 6.
    TODO: Longer class information...
    __hdr__
        Header fields of IPv6.
    TODO.
    v
    fc
    flow
    unpack (buf)
    headers_str ()
        Output extension headers in order defined in RFC1883 (except dest opts)
    classmethod set_proto (p, pktclass)
    classmethod get_proto (p)
    data
    dst
    hlim

```

nxt**plen****src****class** dpkt.ip6.**IP6ExtensionHeader** (*args, **kwargs)Bases: *dpkt.dpkt.Packet*

An extension header is very similar to a 'sub-packet'. We just want to re-use all the hdr unpacking etc.

class dpkt.ip6.**IP6OptsHeader** (*args, **kwargs)Bases: *dpkt.ip6.IP6ExtensionHeader***unpack** (buf)**data****len****nxt****class** dpkt.ip6.**IP6HopOptsHeader** (*args, **kwargs)Bases: *dpkt.ip6.IP6OptsHeader***data****len****nxt****class** dpkt.ip6.**IP6DstOptsHeader** (*args, **kwargs)Bases: *dpkt.ip6.IP6OptsHeader***data****len****nxt****class** dpkt.ip6.**IP6RoutingHeader** (*args, **kwargs)Bases: *dpkt.ip6.IP6ExtensionHeader***sl_bits****unpack** (buf)**data****len****nxt****rsvd_sl_bits****segs_left****type****class** dpkt.ip6.**IP6FragmentHeader** (*args, **kwargs)Bases: *dpkt.ip6.IP6ExtensionHeader***unpack** (buf)**frag_off****m_flag****data**

```

    frag_off_resv_m
    id
    nxt
    resv
class dpkt.ip6.IP6AHHeader(*args, **kwargs)
    Bases: dpkt.ip6.IP6ExtensionHeader
    unpack(buf)
    data
    len
    nxt
    resv
    seq
    spi
class dpkt.ip6.IP6ESPHeader(*args, **kwargs)
    Bases: dpkt.ip6.IP6ExtensionHeader
    unpack(buf)
    data
    seq
    spi
dpkt.ip6.test_ipg()
dpkt.ip6.test_ip6_routing_header()
dpkt.ip6.test_ip6_fragment_header()
dpkt.ip6.test_ip6_options_header()
dpkt.ip6.test_ip6_ah_header()
dpkt.ip6.test_ip6_esp_header()
dpkt.ip6.test_ip6_extension_headers()

```

2.1.30 dpkt.ipx module

Internetwork Packet Exchange.

```

class dpkt.ipx.IPX(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    Internetwork Packet Exchange.
    TODO: Longer class information...
    __hdr__
        Header fields of IPX.
    TODO.
    data

```

dst
len
pt
src
sum
tc

2.1.31 dpkt.llc module

```
class dpkt.llc.LLC(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    802.2 Logical Link Control (LLC) data communication protocol.

    __hdr__ = (
        ('dsap', 'B', 0xaa), # Destination Service Access Point ('ssap', 'B', 0xaa), # Source Service Access Point
        ('ctl', 'B', 3) # Control Byte
    )
    is_snap
    unpack(buf)
    pack_hdr()
    ctl
    data
    dsap
    ssap

dpkt.llc.test_llc()
```

2.1.32 dpkt.loopback module

Platform-dependent loopback header.

```
class dpkt.loopback.Loopback(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    Platform-dependent loopback header.
    TODO: Longer class information...

    __hdr__
        Header fields of Loopback.

    TODO.
    unpack(buf)
    data
    family
```

2.1.33 dpkt.mrt module

Multi-threaded Routing Toolkit.

```
class dpkt.mrt.MRTHeader (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    data
    len
    subtype
    ts
    type

class dpkt.mrt.TableDump (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    unpack (buf)
    attr_len
    data
    originated_ts
    peer_as
    peer_ip
    prefix
    prefix_len
    seq
    status
    view

class dpkt.mrt.BGP4MPMessage (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    data
    dst_as
    dst_ip
    family
    intf
    src_as
    src_ip

class dpkt.mrt.BGP4MPMessage_32 (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    data
    dst_as
    dst_ip
    family
```

```
int f
src_as
src_ip
```

2.1.34 dpkt.netbios module

Network Basic Input/Output System.

```
dpkt.netbios.encode_name(name)
    Return the NetBIOS first-level encoded name.
```

```
dpkt.netbios.decode_name(nbname)
    Return the NetBIOS first-level decoded nbname.
```

```
dpkt.netbios.node_to_service_name(name_service_flags)
```

```
class dpkt.netbios.NS(*args, **kwargs)
```

Bases: `dpkt.dns.DNS`

NetBIOS Name Service.

```
class Q(*args, **kwargs)
```

Bases: `dpkt.dns.Q`

```
cls
```

```
data
```

```
name
```

```
type
```

```
class RR(*args, **kwargs)
```

Bases: `dpkt.dns.RR`

NetBIOS resource record.

```
unpack_rdata(buf, off)
```

```
cls
```

```
data
```

```
name
```

```
rdata
```

```
rlen
```

```
ttl
```

```
type
```

```
pack_name(buf, name)
```

```
unpack_name(buf, off)
```

```
an
```

```
ar
```

```
data
```

```
id
```

```
ns
```


op**qd****class** dpkt.netbios.**Session**(*args, **kwargs)Bases: *dpkt.dpkt.Packet*

NetBIOS Session Service.

data**flags****len****type****class** dpkt.netbios.**Datagram**(*args, **kwargs)Bases: *dpkt.dpkt.Packet*

NetBIOS Datagram Service.

data**flags****id****len****off****sport****src****type**

2.1.35 dpkt.netflow module

Cisco Netflow.

class dpkt.netflow.**NetflowBase**(*args, **kwargs)Bases: *dpkt.dpkt.Packet*

Base class for Cisco Netflow packets.

TODO: Longer class information. . . .

__hdr__

Header fields of NetflowBase.

TODO.**unpack** (*buf*)**class** **NetflowRecordBase**(*args, **kwargs)Bases: *dpkt.dpkt.Packet*

Base class for netflow v1-v7 netflow records.

TODO: Longer class information. . . .

__hdr__

Header fields of NetflowRecordBase.

TODO.

```
    unpack(buf)
count
data
sys_uptime
unix_nsec
unix_sec
version
class dpkt.netflow.Netflow1(*args, **kwargs)
    Bases: dpkt.netflow.NetflowBase
    Netflow Version 1.
    TODO: Longer class information...
    __hdr__
        Header fields of Netflow Version 1.
    TODO.
class NetflowRecord(*args, **kwargs)
    Bases: dpkt.netflow.NetflowRecordBase
    Netflow v1 flow record.
    TODO: Longer class information...
    __hdr__
        Header fields of Netflow Version 1 flow record.
    TODO.
bytes_sent
data
dst_addr
dst_port
end_time
input_iface
ip_proto
next_hop
output_iface
pad1
pad2
pad3
pkts_sent
reserved
src_addr
src_port
```

```
    start_time
    tcp_flags
    tos
count
data
sys_uptime
unix_nsec
unix_sec
version
class dpkt.netflow.Netflow5(*args, **kwargs)
    Bases: dpkt.netflow.NetflowBase
    Netflow Version 5.
    TODO: Longer class information...
    __hdr__
        Header fields of Netflow Version 5.
    TODO.
class NetflowRecord(*args, **kwargs)
    Bases: dpkt.netflow.NetflowRecordBase
    Netflow v5 flow record.
    TODO: Longer class information...
    __hdr__
        Header fields of Netflow Version 5 flow record.
    TODO.
    bytes_sent
    data
    dst_addr
    dst_as
    dst_mask
    dst_port
    end_time
    input_iface
    ip_proto
    next_hop
    output_iface
    pad1
    pad2
    pkts_sent
```

`src_addr`
`src_as`
`src_mask`
`src_port`
`start_time`
`tcp_flags`
`tos`
`count`
`data`
`engine_id`
`engine_type`
`flow_sequence`
`reserved`
`sys_uptime`
`unix_nsec`
`unix_sec`
`version`

class `dpkt.netflow.Netflow6` (*args, **kwargs)

Bases: `dpkt.netflow.NetflowBase`

Netflow Version 6.

XXX - unsupported by Cisco, but may be found in the field. TODO: Longer class information...

`__hdr__`

Header fields of Netflow Version 6.

TODO.

class `NetflowRecord` (*args, **kwargs)

Bases: `dpkt.netflow.NetflowRecordBase`

Netflow v6 flow record.

TODO: Longer class information...

`__hdr__`

Header fields of Netflow Version 6 flow record.

TODO.

`bytes_sent`

`data`

`dst_addr`

`dst_as`

`dst_mask`

`dst_port`

```
    end_time
    in_encaps
    input_iface
    ip_proto
    next_hop
    out_encaps
    output_iface
    pad1
    peer_nexthop
    pkts_sent
    src_addr
    src_as
    src_mask
    src_port
    start_time
    tcp_flags
    tos

count
data
engine_id
engine_type
flow_sequence
reserved
sys_uptime
unix_nsec
unix_sec
version

class dpkt.netflow.Netflow7(*args, **kwargs)
    Bases: dpkt.netflow.NetflowBase
    Netflow Version 7.
    TODO: Longer class information...

    __hdr__
        Header fields of Netflow Version 7.

    TODO.

class NetflowRecord(*args, **kwargs)
    Bases: dpkt.netflow.NetflowRecordBase
    Netflow v6 flow record.
```

TODO: Longer class information. . .

`__hdr__`

Header fields of Netflow Version 6 flow record.

TODO.

`bytes_sent`

`data`

`dst_addr`

`dst_as`

`dst_mask`

`dst_port`

`end_time`

`flags`

`input_iface`

`ip_proto`

`next_hop`

`output_iface`

`pad2`

`pkts_sent`

`router_sc`

`src_addr`

`src_as`

`src_mask`

`src_port`

`start_time`

`tcp_flags`

`tos`

`count`

`data`

`flow_sequence`

`reserved`

`sys_uptime`

`unix_nsec`

`unix_sec`

`version`

`dpkt.netflow.test_net_flow_v1_pack()`

`dpkt.netflow.test_net_flow_v1_unpack()`

```
dpkt.netflow.test_net_flow_v5_pack()
dpkt.netflow.test_net_flow_v5_unpack()
```

2.1.36 dpkt.ntp module

Network Time Protocol.

```
class dpkt.ntp.NTP(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
```

Network Time Protocol.

TODO: Longer class information...

```
__hdr__
```

Header fields of NTP.

```
TODO.
```

```
v
```

```
li
```

```
mode
```

```
data
```

```
delay
```

```
dispersion
```

```
flags
```

```
id
```

```
interval
```

```
originate_time
```

```
precision
```

```
receive_time
```

```
stratum
```

```
transmit_time
```

```
update_time
```

```
dpkt.ntp.test_ntp_pack()
dpkt.ntp.test_ntp_unpack()
```

2.1.37 dpkt.ospf module

Open Shortest Path First.

```
class dpkt.ospf.OSPF(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
```

Open Shortest Path First.

TODO: Longer class information...

```
__hdr__  
    Header fields of OSPF.  
  
TODO.  
  
area  
atype  
auth  
data  
len  
router  
sum  
type  
v
```

2.1.38 dpkt.pcap module

Libpcap file format.

```
class dpkt.pcap.PktHdr (*args, **kwargs)  
    Bases: dpkt.dpkt.Packet  
    pcap packet header.  
    TODO: Longer class information...  
  
    __hdr__  
        Header fields of pcap header.  
  
    TODO.  
  
    caplen  
    data  
    len  
    tv_sec  
    tv_usec  
  
class dpkt.pcap.LEPktHdr (*args, **kwargs)  
    Bases: dpkt.pcap.PktHdr  
    caplen  
    data  
    len  
    tv_sec  
    tv_usec  
  
class dpkt.pcap.FileHdr (*args, **kwargs)  
    Bases: dpkt.dpkt.Packet  
    pcap file header.  
    TODO: Longer class information...
```


`__hdr__`
Header fields of pcap file header.

`TODO.`

`data`

`linktype`

`magic`

`sigfigs`

`snaplen`

`thiszone`

`v_major`

`v_minor`

`class dpkt.pcap.LEFileHdr (*args, **kwargs)`
Bases: `dpkt.pcap.FileHdr`

`data`

`linktype`

`magic`

`sigfigs`

`snaplen`

`thiszone`

`v_major`

`v_minor`

`class dpkt.pcap.Writer (fileobj, snaplen=1500, linktype=1, nano=False)`
Bases: `object`

Simple pcap dumpfile writer.

`TODO: Longer class information. . . .`

`__hdr__`
Header fields of simple pcap dumpfile writer.

`TODO.`

`writepkt (pkt, ts=None)`

`close ()`

`class dpkt.pcap.Reader (fileobj)`
Bases: `object`

Simple pypcap-compatible pcap file reader.

`TODO: Longer class information. . . .`

`__hdr__`
Header fields of simple pypcap-compatible pcap file reader.

`TODO.`

`fd`

fileno ()

datalink ()

setfilter (*value, optimize=1*)

readpkts ()

dispatch (*cnt, callback, *args*)

Collect and process packets with a user callback.

Return the number of packets processed, or 0 for a savefile.

Arguments:

cnt – number of packets to process; or 0 to process all packets until EOF

callback – function with (timestamp, pkt, *args) prototype *args – optional arguments passed to callback on execution

loop (*callback, *args*)

`dpkt.pcap.test_pcap_endian` ()

`dpkt.pcap.test_reader` ()

`dpkt.pcap.test_writer_precision` ()

2.1.39 dpkt.pim module

Protocol Independent Multicast.

class `dpkt.pim.PIM` (**args, **kwargs*)

Bases: `dpkt.dpkt.Packet`

Protocol Independent Multicast.

TODO: Longer class information...

__hdr__

Header fields of PIM.

TODO.

v

type

data

rsvd

sum

`dpkt.pim.test_pim` ()

2.1.40 dpkt.pmap module

Portmap / rpcbind.

class `dpkt.pmap.Pmap` (**args, **kwargs*)

Bases: `dpkt.dpkt.Packet`

Portmap / rpcbind.

TODO: Longer class information. . . .

__hdr__
Header fields of Pmap.

TODO.

data

port

prog

prot

vers

2.1.41 dpkt.ppp module

Point-to-Point Protocol.

class dpkt.ppp.PPP (*args, **kwargs)

Bases: *dpkt.dpkt.Packet*

Point-to-Point Protocol.

TODO: Longer class information. . . .

__hdr__
Header fields of PPP.

TODO.

classmethod set_p (p, pktclass)

classmethod get_p (p)

unpack (buf)

pack_hdr ()

addr

cntrl

data

p

dpkt.ppp.test_ppp ()

dpkt.ppp.test_ppp_short ()

dpkt.ppp.test_packing ()

2.1.42 dpkt.pppoe module

PPP-over-Ethernet.

class dpkt.pppoe.PPPoE (*args, **kwargs)

Bases: *dpkt.dpkt.Packet*

PPP-over-Ethernet.

TODO: Longer class information. . . .

__hdr__
Header fields of PPPoE.

TODO.

v

type

unpack (*buf*)

code

data

len

session

class dpkt.pppoe.PPP (*args, **kwargs)

Bases: *dpkt.ppp.PPP*

unpack (*buf*)

pack_hdr ()

data

p

dpkt.pppoe.test_pppoe_discovery ()

dpkt.pppoe.test_pppoe_session ()

dpkt.pppoe.test_ppp_packing ()

dpkt.pppoe.test_ppp_short ()

2.1.43 dpkt.qq module

class dpkt.qq.QQBasicPacket (*args, **kwargs)

Bases: *dpkt.dpkt.Packet*

command

data

header_type

qqNum

sequence

source

class dpkt.qq.QQ3Packet (*args, **kwargs)

Bases: *dpkt.dpkt.Packet*

command

data

header_type

sequence

source

unknown1
 unknown10
 unknown11
 unknown12
 unknown13
 unknown2
 unknown3
 unknown4
 unknown5
 unknown6
 unknown7
 unknown8
 unknown9

```

class dpkt.qq.QQ5Packet (*args, **kwargs)
  Bases: dpkt.dpkt.Packet
  command
  data
  header_type
  qqNum
  sequence
  source
  unknown
  
```

2.1.44 dpkt.radiotap module

Radiotap

```

class dpkt.radiotap.Radiotap (*args, **kwargs)
  Bases: dpkt.dpkt.Packet
  Radiotap.
  TODO: Longer class information...
  __hdr__
    Header fields of Radiotap.
  TODO.
  tsft_present
  flags_present
  rate_present
  channel_present
  fhss_present
  
```

```
ant_sig_present
ant_noise_present
lock_qual_present
tx_attn_present
db_tx_attn_present
dbm_tx_power_present
ant_present
db_ant_sig_present
db_ant_noise_present
rx_flags_present
chanplus_present
ext_present
unpack (buf)

class Antenna (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    data
    index

class AntennaNoise (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    data
    db

class AntennaSignal (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    data
    db

class Channel (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    data
    flags
    freq

class FHSS (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    data
    pattern
    set

class Flags (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    fcs
```

```
    data
    val
class LockQuality (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    data
    val
data
length
pad
present_flags
version
class RxFlags (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    data
    val
class Rate (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    data
    val
class TSFT (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    data
    usecs
class TxAttenuation (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    data
    val
class DbTxAttenuation (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    data
    db
class DbAntennaNoise (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    data
    db
class DbAntennaSignal (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    data
    db
```

```
class DbmTxPower (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    data
    dbm
```

```
dpkt.radiotap.test_Radiotap()
```

```
dpkt.radiotap.test_fcs()
```

2.1.45 dpkt.radius module

Remote Authentication Dial-In User Service.

```
class dpkt.radius.RADIUS (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
```

Remote Authentication Dial-In User Service.

TODO: Longer class information. . . .

```
__hdr__
    Header fields of RADIUS.
```

```
TODO.
```

```
attrs = ''
```

```
unpack (buf)
```

```
auth
```

```
code
```

```
data
```

```
id
```

```
len
```

```
dpkt.radius.parse_attrs (buf)
    Parse attributes buffer into a list of (type, data) tuples.
```

2.1.46 dpkt.rfb module

Remote Framebuffer Protocol.

```
class dpkt.rfb.RFB (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
```

Remote Framebuffer Protocol.

TODO: Longer class information. . . .

```
__hdr__
    Header fields of RADIUS.
```

```
TODO.
```

```
data
```

```
type
```

```
class dpkt.rfb.SetPixelFormat (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    data

    pad

    pixel_fmt

class dpkt.rfb.SetEncodings (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    data

    num_encodings

    pad

class dpkt.rfb.FramebufferUpdateRequest (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    data

    height

    incremental

    width

    x_position

    y_position

class dpkt.rfb.KeyEvent (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    data

    down_flag

    key

    pad

class dpkt.rfb.PointerEvent (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    button_mask

    data

    x_position

    y_position

class dpkt.rfb.FramebufferUpdate (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    data

    num_rects

    pad

class dpkt.rfb.SetColourMapEntries (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    data
```

first_colour

num_colours

pad

class dpkt.rfb.**CutText** (*args, **kwargs)

Bases: *dpkt.dpkt.Packet*

data

length

pad

2.1.47 dpkt.rip module

Routing Information Protocol.

class dpkt.rip.**RIP** (*args, **kwargs)

Bases: *dpkt.dpkt.Packet*

Routing Information Protocol.

TODO: Longer class information...

__hdr__

Header fields of RIP.

TODO.

unpack (*buf*)

cmd

data

rsvd

v

class dpkt.rip.**RTE** (*args, **kwargs)

Bases: *dpkt.dpkt.Packet*

addr

data

family

metric

next_hop

route_tag

subnet

class dpkt.rip.**Auth** (*args, **kwargs)

Bases: *dpkt.dpkt.Packet*

auth

data

rsvd

type

```
dpkt.rip.test_rtp_pack()
dpkt.rip.test_rtp_unpack()
```

2.1.48 dpkt.rpc module

Remote Procedure Call.

```
class dpkt.rpc.RPC(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
```

Remote Procedure Call.

TODO: Longer class information...

```
__hdr__
    Header fields of RPC.
```

TODO.

```
class Auth(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
```

```
    unpack(buf)
```

```
    data
```

```
    flavor
```

```
class Call(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
```

```
    unpack(buf)
```

```
    data
```

```
    proc
```

```
    prog
```

```
    rpcvers
```

```
    vers
```

```
class Reply(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
```

```
    class Accept(*args, **kwargs)
```

```
        Bases: dpkt.dpkt.Packet
```

```
        unpack(buf)
```

```
        data
```

```
        stat
```

```
    class Reject(*args, **kwargs)
```

```
        Bases: dpkt.dpkt.Packet
```

```
        unpack(buf)
```

```
        data
```

```
        stat
```

```
    unpack(buf)
```

```
    data
    stat
unpack (buf)
data
dir
xid
```

```
dpkt.rpc.unpack_xdrlist (cls, buf)
```

```
dpkt.rpc.pack_xdrlist (*args)
```

2.1.49 dpkt.rtp module

Real-Time Transport Protocol.

```
class dpkt.rtp.RTP (*args, **kwargs)
```

```
    Bases: dpkt.dpkt.Packet
```

```
    Real-Time Transport Protocol.
```

```
    TODO: Longer class information...
```

```
    __hdr__
```

```
        Header fields of RTP.
```

```
    TODO.
```

```
    csrc = ''
```

```
    version
```

```
    p
```

```
    x
```

```
    cc
```

```
    m
```

```
    data
```

```
    seq
```

```
    ssrc
```

```
    ts
```

```
    pt
```

```
    unpack (buf)
```

```
dpkt.rtp.test_rtp()
```

2.1.50 dpkt.rx module

Rx Protocol.

```

class dpkt.rx.Rx(*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    Rx Protocol.

    TODO: Longer class information...

    __hdr__
        Header fields of Rx.

    TODO.

    call
    cid
    data
    epoch
    flags
    security
    seq
    serial
    service
    status
    sum
    type

```

2.1.51 dpkt.sccp module

Cisco Skinny Client Control Protocol.

```

class dpkt.sccp.ActivateCallPlane(*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    data

    line_instance

```

```

class dpkt.sccp.CallInfo(*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    call_id
    call_type
    called_party
    called_party_name
    calling_party
    calling_party_name
    data
    line_instance
    orig_called_party

```

```
    orig_called_party_name
class dpkt.sccp.CallState (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    call_id
    call_state
    data
    line_instance
class dpkt.sccp.ClearPromptStatus (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    call_id
    data
    line_instance
class dpkt.sccp.CloseReceiveChannel (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    conference_id
    data
    passthru_party_id
class dpkt.sccp.DisplayPromptStatus (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    call_id
    data
    display_msg
    line_instance
    msg_timeout
class dpkt.sccp.DisplayText (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    data
    display_msg
class dpkt.sccp.KeypadButton (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    button
    data
class dpkt.sccp.OpenReceiveChannel (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    conference_id
    data
    echo_cancel_type
    g723_bitrate
```

```
ms_packet
passthru_party_id
payload_capability
class dpkt.sccp.OpenReceiveChannelAck(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    channel_status
    data
    ip
    passthru_party_id
    port
class dpkt.sccp.SelectStartKeys(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    call_id
    data
    line_id
    softkey_map
    softkey_set
class dpkt.sccp.SetLamp(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    data
    lamp_mode
    stimulus
    stimulus_instance
class dpkt.sccp.SetSpeakerMode(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    data
    speaker
class dpkt.sccp.StartMediaTransmission(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    call_reference
    conference_id
    data
    g723_bitrate
    ipv4_or_ipv6
    max_frames_per_pkt
    ms_packet
    passthru_party_id
    payload_capability
```

precedence

remote_ip

remote_port

silence_suppression

class dpkt.sccp.**StartTone** (*args, **kwargs)
Bases: *dpkt.dpkt.Packet*

data

tone

class dpkt.sccp.**StopMediaTransmission** (*args, **kwargs)
Bases: *dpkt.dpkt.Packet*

conference_id

data

passthrupty_id

class dpkt.sccp.**SCCP** (*args, **kwargs)
Bases: *dpkt.dpkt.Packet*

Cisco Skinny Client Control Protocol.

TODO: Longer class information. . . .

__hdr__

Header fields of SCCP.

TODO.

unpack (*buf*)

data

len

msg

msgid

rsvd

2.1.52 dpkt.sctp module

Stream Control Transmission Protocol.

class dpkt.sctp.**SCTP** (*args, **kwargs)
Bases: *dpkt.dpkt.Packet*

Stream Control Transmission Protocol.

TODO: Longer class information. . . .

__hdr__

Header fields of SCTP.

TODO.

unpack (*buf*)

data


```

    dport
    sport
    sum
    vtag
class dpkt.sctp.Chunk(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    unpack(buf)
    data
    flags
    len
    type
dpkt.sctp.test_sctp_pack()
dpkt.sctp.test_sctp_unpack()

```

2.1.53 dpkt.sip module

Session Initiation Protocol.

```

class dpkt.sip.Request(*args, **kwargs)
    Bases: dpkt.http.Request
    SIP request.
    TODO: Longer class information...
    __hdr__
        Header fields of SIP request.
    TODO.
class dpkt.sip.Response(*args, **kwargs)
    Bases: dpkt.http.Response
    SIP response.
    TODO: Longer class information...
    __hdr__
        Header fields of SIP response.
    TODO.

```

2.1.54 dpkt.sll module

Linux libpcap “cooked” capture encapsulation.

```

class dpkt.sll.SLL(*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    Linux libpcap “cooked” capture encapsulation.
    TODO: Longer class information...

```

```
__hdr__  
    Header fields of SLL.
```

```
TODO.
```

```
unpack(buf)
```

```
data
```

```
ethtype
```

```
hdr
```

```
hlen
```

```
hrd
```

```
type
```

```
dpkt.sll.test_sll()
```

2.1.55 dpkt.smb module

Server Message Block.

```
class dpkt.smb.SMB(*args, **kwargs)
```

```
    Bases: dpkt.dpkt.Packet
```

```
    Server Message Block.
```

```
    TODO: Longer class information...
```

```
__hdr__ = [  
    ('proto', '4s', b'ÿSMB'), ('cmd', 'B', 0), ('status', 'I', SMB_STATUS_SUCCESS), ('flags', 'B', 0),  
    ('flags2', 'H', 0), ('_pidhi', 'H', 0), ('security', '8s', b''), ('rsvd', 'H', 0), ('tid', 'H', 0), ('_pidlo', 'H', 0),  
    ('uid', 'H', 0), ('mid', 'H', 0)
```

```
]
```

```
pid
```

```
cmd
```

```
data
```

```
flags
```

```
flags2
```

```
mid
```

```
proto
```

```
rsvd
```

```
security
```

```
status
```

```
tid
```

```
uid
```

```
dpkt.smb.test_smb()
```

2.1.56 dpkt.snoop module

Snoop file format.

class dpkt.snoop.**PktHdr** (*args, **kwargs)

Bases: *dpkt.dpkt.Packet*

snoop packet header.

TODO: Longer class information. . . .

__hdr__

Header fields of snoop packet header.

TODO.

cum_drops

data

incl_len

orig_len

rec_len

ts_sec

ts_usec

class dpkt.snoop.**FileHdr** (*args, **kwargs)

Bases: *dpkt.dpkt.Packet*

snoop file header.

TODO: Longer class information. . . .

__hdr__

Header fields of snoop file header.

TODO.

data

linktype

magic

v

class dpkt.snoop.**Writer** (fileobj, linktype=4)

Bases: object

Simple snoop dumpfile writer.

TODO: Longer class information. . . .

TODO.

writepkt (pkt, ts=None)

close ()

class dpkt.snoop.**Reader** (fileobj)

Bases: object

Simple pypcap-compatible snoop file reader.

TODO: Longer class information. . . .

```
TODO.  
fileno()  
datalink()  
setfilter(value, optimize=1)  
readpkts()  
dispatch(cnt, callback, *args)  
loop(callback, *args)
```

2.1.57 dpkt.ssl module

Secure Sockets Layer / Transport Layer Security.

```
class dpkt.ssl.SSL2(*args, **kwargs)  
    Bases: dpkt.dpkt.Packet
```

```
    unpack(buf)
```

```
    data
```

```
    len
```

```
    msg
```

```
    pad
```

```
class dpkt.ssl.TLS(*args, **kwargs)  
    Bases: dpkt.dpkt.Packet
```

```
    unpack(buf)
```

```
    data
```

```
    len
```

```
    type
```

```
    version
```

```
dpkt.ssl.parse_variable_array(buf, lenbytes)
```

Parse an array described using the ‘Type name<x..y>’ syntax from the spec Read a length at the start of buf, and returns that many bytes after, in a tuple with the TOTAL bytes consumed (including the size). This does not check that the array is the right length for any given datatype.

```
dpkt.ssl.parse_extensions(buf)
```

Parse TLS extensions in passed buf. Returns an ordered list of extension tuples with ordinal extension type as first value and extension data as second value. Passed buf must start with the 2-byte extensions length TLV. <http://www.iana.org/assignments/tls-extensiontype-values/tls-extensiontype-values.xhtml>

```
exception dpkt.ssl.SSL3Exception
```

```
    Bases: exceptions.Exception
```

```
class dpkt.ssl.TLSRecord(*args, **kwargs)
```

```
    Bases: dpkt.dpkt.Packet
```

SSLv3 or TLSv1+ packet.

In addition to the fields specified in the header, there are compressed and decrypted fields, indicating whether, in the language of the spec, this is a TLSP plaintext, TLSCompressed, or TLSCiphertext. The application will have to figure out when it’s appropriate to change these values.

```

    length
    unpack (buf)
    data
    type
    version
class dpkt.ssl.TLSChangeCipherSpec (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    ChangeCipherSpec message is just a single byte with value 1
    data
    type
class dpkt.ssl.TLSAppData
    Bases: str
    As far as TLSRecord is concerned, AppData is just an opaque blob.
class dpkt.ssl.TLSAlert (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    data
    description
    level
class dpkt.ssl.TLSHelloRequest (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    data
class dpkt.ssl.TLSClientHello (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    unpack (buf)
    data
    random
    version
class dpkt.ssl.TLSServerHello (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    unpack (buf)
    data
    random
    version
class dpkt.ssl.TLSCertificate (*args, **kwargs)
    Bases: dpkt.dpkt.Packet
    unpack (buf)
    data
class dpkt.ssl.TLSUnknownHandshake (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

```

data

`dpkt.ssl.TLSServerKeyExchange`
alias of `TLSUnknownHandshake`

`dpkt.ssl.TLSCertificateRequest`
alias of `TLSUnknownHandshake`

`dpkt.ssl.TLSServerHelloDone`
alias of `TLSUnknownHandshake`

`dpkt.ssl.TLSCertificateVerify`
alias of `TLSUnknownHandshake`

`dpkt.ssl.TLSClientKeyExchange`
alias of `TLSUnknownHandshake`

`dpkt.ssl.TLSFinished`
alias of `TLSUnknownHandshake`

class `dpkt.ssl.TLSHandshake` (*args, **kwargs)

Bases: `dpkt.dpkt.Packet`

A TLS Handshake message

This goes for all messages encapsulated in the Record layer, but especially important for handshakes and app data: A message may be spread across a number of TLSRecords, in addition to the possibility of there being more than one in a given Record. You have to put together the contents of TLSRecord's yourself.

unpack (*buf*)

length

data

length_bytes

type

class `dpkt.ssl.SSLFactory`

Bases: `object`

`dpkt.ssl.tls_multi_factory` (*buf*)

Attempt to parse one or more TLSRecord's out of buf

Parameters *buf* – string containing SSL/TLS messages. May have an incomplete record on the end

Returns

[TLSRecord] int, total bytes consumed, != len(buf) if an incomplete record was left at the end.

Raises SSL3Exception.

class `dpkt.ssl.TestTLS`

Bases: `object`

Test basic TLS functionality. Test that each TLSRecord is correctly discovered and added to TLS.records

classmethod `setup_class` ()

`test_records_length` ()

`test_record_type` ()

`test_record_version()`

class dpkt.ssl.TestTLSRecord

Bases: object

Test basic TLSRecord functionality For this test, the contents of the record doesn't matter, since we're not parsing the next layer.

classmethod setup_class()

test_content_type()

test_version()

test_length()

test_data()

test_initial_flags()

test_repack()

test_total_length()

test_raises_need_data_when_buf_is_short()

class dpkt.ssl.TestTLSChangeCipherSpec

Bases: object

It's just a byte. This will be quick, I promise

classmethod setup_class()

test_parses()

test_total_length()

class dpkt.ssl.TestTLSAppData

Bases: object

AppData is basically just a string

test_value()

class dpkt.ssl.TestTLShandshake

Bases: object

classmethod setup_class()

test_created_inside_message()

test_length()

test_raises_need_data()

class dpkt.ssl.TestClientHello

Bases: object

This data is extracted from and verified by Wireshark

classmethod setup_class()

test_client_hello_constructed()

Make sure the correct class was constructed

test_client_random_correct()

test_cipher_suite_length()

```
test_session_id()
test_compression_methods()
test_total_length()
class dpkt.ssl.TestServerHello
    Bases: object
    Again, from Wireshark
    classmethod setup_class()
    test_constructed()
    test_random_correct()
    test_cipher_suite()
    test_total_length()
class dpkt.ssl.TestTLSCertificate
    Bases: object
    We use a 2016 certificate record from iana.org as test data.
    classmethod setup_class()
    test_num_certs()
class dpkt.ssl.TestTLSMultiFactory
    Bases: object
    Made up test data
    classmethod setup_class()
    test_num_messages()
    test_bytes_parsed()
    test_first_msg_data()
    test_second_msg_data()
    test_incomplete()
```

2.1.58 dpkt.ssl_ciphersuites module

Nicely formatted cipher suite definitions for TLS

A list of cipher suites in the form of CipherSuite objects. These are supposed to be immutable; don't mess with them.

```
class dpkt.ssl_ciphersuites.CipherSuite(code, kx, auth, cipher, mode, mac, name=None, en-
                                         coding=None)
```

Bases: object

Encapsulates a cipher suite.

Members/args: * code: two-byte ID code, as int * kx: key exchange algorithm, e.g. 'RSA' or 'DHE' * auth: authentication algorithm, e.g. 'RSA' or 'DSS' * cipher: stream or block cipher algorithm, e.g. 'AES_128' * mode: mode of operation for block ciphers, e.g. 'CBC' or 'GCM' * mac: message authentication code algorithm, e.g. 'MD5' or 'SHA256' * name: cipher suite name as defined in the RFCs,

e.g. 'TLS_RSA_WITH_RC4_40_MD5', can be generated by default from the other parameters

- encoding: encoding algorithm, defaults to cipher+mode

Additional members: * kx_auth: kx+auth algorithm, as 'KeyExchangeAlgorithm' in RFCs

kx

auth

kx_auth

encoding

name

MAC_SIZES = {'SHA': 20, 'SHA256': 32, 'SHA384': 48, 'MD5': 16}

BLOCK_SIZES = {'AES_128': 16, 'AES_256': 16}

mac_size

In bytes. Default to 0.

block_size

In bytes. Default to 1.

dpkt.ssl_ciphersuites.**BY_NAME** (*name*)

class dpkt.ssl_ciphersuites.**TestCipherSuites**

Bases: object

test_kx()

test_auth()

test_by_name_and_code()

2.1.59 dpkt.stp module

Spanning Tree Protocol.

class dpkt.stp.**STP** (**args, **kwargs*)

Bases: *dpkt.dpkt.Packet*

Spanning Tree Protocol.

TODO: Longer class information...

__hdr__

Header fields of STP.

TODO.

age

max_age

bridge_id

data

flags

hello

port_id

proto_id

```
root_id
root_path
type
v
fd
```

```
dpkt.stp.test_stp()
```

2.1.60 dpkt.stun module

Simple Traversal of UDP through NAT.

```
class dpkt.stun.STUN (*args, **kwargs)
```

Bases: *dpkt.dpkt.Packet*

Simple Traversal of UDP through NAT.

STUN - RFC 3489 <http://tools.ietf.org/html/rfc3489> Each packet has a 20 byte header followed by 0 or more attribute TLVs.

```
__hdr__
    Header fields of STUN.
```

```
TODO.
```

```
data
```

```
len
```

```
type
```

```
xid
```

```
dpkt.stun.tlv(buf)
```

```
dpkt.stun.parse_attrs(buf)
```

Parse STUN.data buffer into a list of (attribute, data) tuples.

```
dpkt.stun.test_stun_response()
```

```
dpkt.stun.test_stun_padded()
```

2.1.61 dpkt.tcp module

Transmission Control Protocol.

```
class dpkt.tcp.TCP (*args, **kwargs)
```

Bases: *dpkt.dpkt.Packet*

Transmission Control Protocol.

TODO: Longer class information...

```
__hdr__
    Header fields of TCP.
```

```
TODO.
```

```
opts = ''
```

```
off
```

unpack (*buf*)

ack

data

dport

flags

seq

sport

sum

urp

win

`dpkt.tcp.parse_opts` (*buf*)

Parse TCP option buffer into a list of (option, data) tuples.

`dpkt.tcp.test_parse_opts` ()

`dpkt.tcp.test_offset` ()

2.1.62 dpkt.telnet module

Telnet.

`dpkt.telnet.strip_options` (*buf*)

Return a list of lines and dict of options from telnet data.

`dpkt.telnet.test_telnet` ()

2.1.63 dpkt.tftp module

Trivial File Transfer Protocol.

class `dpkt.tftp.TFTP` (**args, **kwargs*)

Bases: `dpkt.dpkt.Packet`

Trivial File Transfer Protocol.

TODO: Longer class information....

__hdr__

Header fields of TFTP.

TODO.

unpack (*buf*)

data

opcode

`dpkt.tftp.test_op_rrq` ()

`dpkt.tftp.test_op_data` ()

`dpkt.tftp.test_op_err` ()

2.1.64 dpkt.tns module

Transparent Network Substrate.

class dpkt.tns.**TNS** (*args, **kwargs)

Bases: *dpkt.dpkt.Packet*

Transparent Network Substrate.

TODO: Longer class information. . . .

__hdr__

Header fields of TNS.

TODO.

unpack (*buf*)

data

hdrsum

length

msg

pktsum

rsvd

type

dpkt.tns.**test_tns** ()

2.1.65 dpkt.tpkt module

ISO Transport Service on top of the TCP (TPKT).

class dpkt.tpkt.**TPKT** (*args, **kwargs)

Bases: *dpkt.dpkt.Packet*

ISO Transport Service on top of the TCP (TPKT).

TODO: Longer class information. . . .

__hdr__

Header fields of TPKT.

TODO.

data

len

rsvd

v

2.1.66 dpkt.udp module

User Datagram Protocol.

```

class dpkt.udp.UDP (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    User Datagram Protocol.

    TODO: Longer class information. ...

    __hdr__
        Header fields of UDP.

    TODO.

    data
    dport
    sport
    sum
    ulen

```

2.1.67 dpkt.vrrp module

Virtual Router Redundancy Protocol.

```

class dpkt.vrrp.VRRP (*args, **kwargs)
    Bases: dpkt.dpkt.Packet

    Virtual Router Redundancy Protocol.

    TODO: Longer class information. ...

    __hdr__
        Header fields of VRRP.

    TODO.

    addrs = ()
    auth = ''
    v
    type
    unpack (buf)
    advtime
    atype
    count
    data
    priority
    sum
    vrid

    dpkt.vrrp.test_vrrp()

```

2.1.68 dpkt.yahoo module

Yahoo Messenger.

class dpkt.yahoo.YHOO(*args, **kwargs)

Bases: *dpkt.dpkt.Packet*

Yahoo Messenger.

TODO: Longer class information. . . .

__hdr__

Header fields of Yahoo Messenger.

TODO.

connid

data

length

magic

nick1

nick2

service

type

unknown

version

class dpkt.yahoo.YMSG(*args, **kwargs)

Bases: *dpkt.dpkt.Packet*

data

length

type

unknown1

unknown2

version

3.1 Authors

3.1.1 Original author

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3.1.2 Contributors

Timur Alperovich <timuralp@umich.edu> radiotap module

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keisuke.nishimoto@gmail.com Snoop file parser

Jon Oberheide <jon@oberheide.org> STUN, H.225, TPKT, NTP, RIP, Diameter, SCTP, BGP, MRT, RX modules

plotnikoff@gmail.com handle dynamic imports from py2exe/freeze.py/zipped egg packages

simdream@gmail.com handle multiple cookie values in HTTP

Owen Stephens <owen@owenstephens.co.uk> IP6 extension header support

Robert Stone <otaku@monkey.org> Netflow and QQ modules

Thomas Taranowski <thomastaranowski@yahoo.com> dnet IP checksum bug on i386

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Tim Yardley <yardley@gmail.com> DHCP definitions

obormot <oscar.ibatullin@gmail.com> pcapng module, Packet repr improvements

Kyle Keppler <kyle.keppler@gmail.com> Python 3 port

Hao Sun <sunhao2013@gmail.com> Python 3 port

If you want to contribute to dpkt, see *Contributing*.

3.2 Changelog

3.3 Development plans

3.3.1 Current plans

- Be Awesome

3.3.2 Future plans

- Maintain the Awesome

3.4 Contributing

3.4.1 Report a Bug or Make a Feature Request

Please go to the GitHub Issues page: <https://github.com/kbandla/dpkt/issues>.

3.4.2 Checkout the Code

```
git clone https://github.com/kbandla/dpkt.git
```

3.4.3 Become a Developer

dpkt uses the ‘GitHub Flow’ model: [GitHub Flow](#)

- To work on something new, create a descriptively named branch off of master (ie: my-awesome)
- Commit to that branch locally and regularly push your work to the same named branch on the server
- When you need feedback or help, or you think the branch is ready for merging, open a pull request
- After someone else has reviewed and signed off on the feature, they or you can merge it into master

New Feature or Bug


```
$ git checkout -b my-awesome  
$ git push -u origin my-awesome  
$ <code for a bit>; git push  
$ <code for a bit>; git push  
$ tox (this will run all the tests)
```

- Go to github and hit 'New pull request'
- Someone reviews it and says 'AOK'
- Merge the pull request (green button)

3.5 License

BSD 3-Clause License, as the upstream project

4.1 Notes

4.1.1 PyPI Release How-To

Notes and information on how to do the PyPI release for the dpkt project.

Package Requirements

- pip install tox
- pip install wheel

Tox Background

Tox will install the dpkt package into a blank virtualenv and then execute all the tests against the newly installed package. So if everything goes okay, you know the pypi package installed fine and the tests (which pull from the installed dpkt package) also ran okay.

Create the PyPI Release

```
$ cd dpkt
$ tox
$ vi dpkt/__init__.py and bump the version
$ python setup.py release
  <enter your pypi password>
```

If everything above went okay...

```
$ git add dpkt/__init__.py
$ git commit -m "dpkt version 1.8.7 (or whatever)"
$ git tag v1.8.7 (or whatever)
$ git push --tags
$ git push
```

Git Releases (discussion)

You can also do a ‘release’ on GitHub (the tags above are perfect for that). In general this is discouraged, people should always do a `$pip install dpkt`. If people want older releases they can do a `$pip install dpkt==<old version>`. Providing tarballs/zip file on GitHub will just confuse new users and they’ll have a ‘bad experience’ when trying to deal with a tarball.

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