LAMPIRAN

1) 01_input_cisco.conf

```
input {
    snmp {
   ecs_compatibility => disabled
        hosts => [
            {host  =>  "udp:127.0.0.1/161"  version  =>  "2c"
community=> "yourCommunity"},
            {host  =>  "udp:127.0.0.3/161"  version  =>  "2c"
community=> " yourCommunity "}
        ]
        mib_paths => [
            "/home/ubuntu/mib-dic/CISCO-PROCESS-MIB.dic",
            "/home/ubuntu/mib-dic/CISCO-MEMORY-POOL-
MIB.dic"
        ]
   walk => ["1.3.6.1.4.1.9.2.1.58","1.3.6.1.4.1.9.2.1.3"]
   tables => [
        {
           name => "memmoryName"
           columns => ["1.3.6.1.4.1.9.9.48.1.1.1.2"]
        }]
        tables => [
            {
               name => "memmoryUse"
               columns => ["1.3.6.1.4.1.9.9.48.1.1.1.5"]
            }]
        tables => [
            {
               name => "memmoryFree"
               columns => ["1.3.6.1.4.1.9.9.48.1.1.1.6"]
            }]
        tables => [
            {
               name => "indexCpu"
               columns => ["1.3.6.1.4.1.9.9.109.1.1.1.1.2"]
            }]
   tables => [
            {
```

```
                name => "ifIntName"
                columns => ["1.3.6.1.2.1.31.1.1.1.1"]
            }]
        tables => [
            {
                name => "ifHCInOctets"
                columns => ["1.3.6.1.2.1.31.1.1.1.6"]
            }]
        tables => [
            {
                name => "ifHCOutOctets"
                columns => ["1.3.6.1.2.1.31.1.1.1.10"]
            }]
        tables => [
            {
                name => "ifOperStatus"
                columns => ["1.3.6.1.2.1.2.2.1.8"]
            }]
        tables => [
            {
                name => "ifAliass"
                columns => ["1.3.6.1.2.1.31.1.1.1.18"]
            }]
    tables => [
      {
        name => "system"
        columns => ["1.3.6.1.2.1.1"]
    }]
        tables=> [
            {
              name => "nameHardware"
              columns => ["1.3.6.1.2.1.47.1.1.1.1.7"]
            }]
        tables=> [
            {
              name=>"availCpu"
              columns=> ["1.3.6.1.4.1.9.9.109.1.1.1.1.5"]
            }]

    oid_path_length => 2
        add_field       =>      {       "host_ip"       =>
"%{[@metadata][host_address]}"}
```

```
            tags   =>   ["%{[@metadata][host_address]}",   "snmp",
   "cisco", "system"]
      type => "snmp"
       }
   }
```

2) 01_filter_cisco.conf

```
filter {
    if [type] == "snmp" {
        if "cisco" in [tags][2]{
          mutate {rename => {"3.0" => "hostname"}}
           ruby  {  code  =>  "value  =  event.get('system').find
{|h|   h['index']   ==   '3.0'}['sysUpTime.sysUpTimeInstance'];
event.set('sysUp', value/100)" }
          ruby {
                path    =>    "/etc/logstash/ruby-script/filter-
cpu.rb"
                script_params =>
                {
                "index" => "indexCpu"
                "name" => "nameHardware"
                "avail" => "availCpu"
                }
            }
          ruby {
                path    =>    "/etc/logstash/ruby-script/filter-
memmory.rb"
                script_params =>
                {
                "name" => "memmoryName"
                "free" => "memmoryFree"
                "use" => "memmoryUse"
                }
            }
          ruby {
                path    =>    "/etc/logstash/ruby-script/filter-
interface.rb"
                script_params =>
```

```
                {
                "OperStat" => "ifOperStatus"
                "name" => "ifIntName"
                "octIn" => "ifHCInOctets"
                "octOut" => "ifHCOutOctets"
            "host" => "hostname"
            "alias" => "ifAliass"
                }
          }
          mutate{
            remove_field    =>    ["nameHardware",    "availCpu",
"indexCpu","ifIntName","ifHCInOctets",

      "ifHCOutOctets","ifOperStatus","memmoryName","memmoryFree
","memmoryUse","ifAliass"]
           }
        }#if cisco
    }#if snmp
}#filter
```

3) 01_output_cisco.conf

```
   output {
   #   stdout
   #   {
   #      codec => rubydebug
   #   }
      if [type] == "snmp"{
         elasticsearch {
            hosts => ["localhost:9200"]
            index => "snmp-%{[@metadata][host_address]}"
            user => "elastic"
            password => "yourPassword"
         }
      }
   }
```

4) 02_input_cisco.conf

```
input {
  udp {
    port => "9514"
    type => "syslog-cisco"
  }
tcp {
    port => "9514"
    type => "syslog-cisco"
  }

}
```

5) 02_filter_cisco.conf

```
filter {
  # NOTE: Filter Log cisco
  if [type] == "syslog-cisco" {
    #  Hash  untuk  redudansi  penyimpanan  jika  router
mengirimkan log ke lebih dari 1 server logstash
    fingerprint {
      source                => [ "message" ]
      method                => "SHA1"
      key                   => "identityLogJarvis"
      concatenate_sources => true
    }
    # Enrichment Log dengan regex
    grok {
      # Untuk Costum Pattern
      patterns_dir => [ "/etc/logstash/customPatterns" ]
      # Pattern Utama
      match => [
        # IOS
   "message","%{SYSLOG5424PRI}(%{NUMBER:squenc_log}:
)?(%{HOSTNAME:hostname_log}:        )?(%{INT:cisco_seq_num}:
)?.?(%{CISCOTIMESTAMP:log_date}:
)(%%{CISCO_REASON:facility}-)(%{INT:log_level}-
)(%{CISCO_REASON:facility_mnemonic}:
)?%{GREEDYDATA:message}",
   "message","%{SYSLOG5424PRI}(%{NUMBER:squenc_log}:
)?(%{HOSTNAME:hostname_log}:        )?(%{INT:cisco_seq_num}:
)?.?(%{CISCOTIMESTAMP:log_date}:
```

```
)(%%{CISCO_REASON:facility}-)(%{CISCO_REASON:facility_sub}-
)?(%{INT:log_level}-)(%{CISCO_REASON:facility_mnemonic}:
)?%{GREEDYDATA:message}",
   "message","%{SYSLOG5424PRI}(%{NUMBER:squenc_log}:
)?(%{HOSTNAME:hostname_log}:        )?(%{INT:cisco_seq_num}:
)?.?(%{CISCOTIMESTAMP:log_date}                        )(%{TZ}:
)(%%{CISCO_REASON:facility}-)(%{INT:log_level}-
)(%{CISCO_REASON:facility_mnemonic}:
)?%{GREEDYDATA:message}",
   "message","%{SYSLOG5424PRI}(%{NUMBER:squenc_log}:
)?(%{HOSTNAME:hostname_log}:        )?(%{INT:cisco_seq_num}:
)?.?(%{CISCOTIMESTAMP:log_date}                        )(%{TZ}:
)(%%{CISCO_REASON:facility}-)(%{CISCO_REASON:facility_sub}-
)?(%{INT:log_level}-)(%{CISCO_REASON:facility_mnemonic}:
)?%{GREEDYDATA:message}"
      ]

      overwrite => [ "message" ]

      add_tag => [ "cisco-ios" ]

      remove_field => [ "syslog5424_pri", "@version" ]
    }
  }

  # IF jika pattern di temukan
  if "cisco-ios" in [tags]{
  # Menyesuaikan timestamp dengan date log
    date {
      match => [
        "log_date",

        # IOS
        "MMM  dd HH:mm:ss.SSS ZZZ",
        "MMM  dd HH:mm:ss ZZZ",
        "MMM  dd HH:mm:ss.SSS",

        # Nexus
        "YYYY MMM dd HH:mm:ss.SSS ZZZ",
        "YYYY MMM dd HH:mm:ss ZZZ",
        "YYYY MMM dd HH:mm:ss.SSS",
```

```
        # Hail marry
        "ISO8601"
      ]
      target => "@timestamp"
    }

    # Translate IP agar lebih mudah di baca
    translate {
      field       => "[host][ip]"
      destination => "hostname"

      dictionary => [
        "103.172.22.1", "KimengNTT",
    "103.166.4.1", "PamaPersada",
    "192.168.122.139", "Local-Test"
      ]
    }

    mutate {
        convert => {
            "log_level" =>"integer"
                    }
           }

    # Enrichent log level.
    translate {
      field       => "log_level"
      destination => "log_level_detail"

      dictionary => [
        "0", "Emergency",
        "1", "Alert",
        "2", "Critical",
        "3", "Error",
        "4", "Warning",
        "5", "Notification",
        "6", "Informational"
      ]
    }

    # Enrichment facility
    #             NOTE:                                referensi
```

```
https://gist.github.com/justinjahn/85305bc7b7df9a6412baedce5
f1a0ece
    translate {
      field       => "facility"
      destination => "facility_full"

      dictionary => [
        "AAA",     "Authentication,    authorization,    and
accounting",
        "AAA_CACHE",   "Authentication,   authorization,   and
accounting cache",
        "AAAA", "TACACS+ authentication, authorization, and
accounting security",
        "AAL5", "ATM Adaptation Layer 5",
        "AC", "Attachment circuit",
        "ACCESS_IE", "Access information element",
        "ACE", "Access control encryption",
        "ACL_ASIC", "Access control list ASIC",
        "ACLMERGE", "Access control list merge",
        "ACLMGR", "Access control list manager",
        "ADAPTER", "CMCC adapter task",
        "ADJ", "Adjacency subsystem",
        "AESOP_AIM",   "Service   engine   advanced   interface
module",
        "AFLSEC", "Accelerated Flow Logging Security",
        "AHDLC_TRINIAN",   "PPP   in   HDLC-like   framing   device
driver",
        "AICMGMT", "Alarm interface controller management",
        "AIM", "Advanced Interface Module (AIM)",
        "AIP", "ATM Interface Processor",
        "ALARM", "Telco chassis alarm related",
        "ALC", "ATM line card (ALC)",
        "ALIGN", "Memory optimization in Reduced Instruction
Set Computer (RISC) processor",
        "ALPS", "Airline Protocol Support",
        "AMD79C971_FE",   "Am79C971   Fast   Ethernet   device
driver",
        "AMDP2_FE", "AMDP2 Ethernet and Fast Ethernet",
        "AP", "Authentication Proxy (AP)",
        "APPFW", "APPFW for HTTP subsystem",
        "APS", "Automatic Protection Switching",
        "ARAP", "Apple Remote Access Protocol (ARAP)",
```

```
            "ARCHIVE_CONFIG", "Archive configuration-related",
            "ARCHIVE_DIFF", "Archive Diff and Rollback-related",
            "AS5400", "Cisco AS5400 platform",
            "AS5400_ENVM", "Cisco AS5400 environmental monitor",
            "ASPP", "Asynchronous Security Protocol (ASPP)",
            "AT", "AppleTalk (AT)",
            "ATM", "Asynchronous Transfer Mode",
            "ATM_AIM", "ATM advanced module",
            "ATMCES", "ATM access concentrator PCI port adapter
driver",
            "ATMCORE", "ATM core",
            "ATMLC", "Cisco 7300 ATM line card software",
            "ATMOC3", "ATM OC-3 network module",
            "ATMOC3POM", "ATM- OC3-POM module",
            "ATMPA", "ATM port adapter",
            "ATMSIG", "ATM signaling subsystem",
            "ATMSPA", "ATM Shared Port Adapter",
            "ATMSSCOP",   "ATM   Service   Specific   Connection
Oriented Protocol (SSCOP)",
            "ATOM_NP_CLIENT",  "Any  Transport  over  MPLS  NP
client",
            "ATOM_SEG", "Any Transport Over MPLS (AToM) Segment
Handler",
            "ATOM_TRANS", "Layer 2 Transport over MPLS",
            "AUDIT", "Audit feature",
            "AUTORP", "PIMv2 AUTORP",
            "AUTOSEC", "AutoSecure",
            "AUTOSHUT", "Autoshut",
            "AUTOSTATE", "Autostate feature",
            "BACKPLANE_BUS_ASIC", "Backplane bus ASIC",
            "BAMBAM", "One-port Fast Ethernet with coprocessor
assist",
            "BAP", "PPP Bandwidth Allocation Protocol (BAP)",
            "BAT", "Power supply (BAT)",
            "BCM", "Broadcom switch controller",
            "BCM3220", "Cable modem MAC controller interface",
            "BCM56XX", "BCM56XX control layer",
            "BCM_GEWAN", "Messages related to the Cisco 3800
system controller",
            "BERT", "Bit error rate tester (BERT)",
            "BFD", "Bidirectional Forwarding Detection",
            "BFDFSM", "BFD finite state machine",
```

```
        "BGP", "Border Gateway Protocol",
        "BGP_MPLS", "BGP MPLS common",
        "BIT", "Dynamic bitlist",
        "BOOMERANG", "Boomerang distributed reverse proxy
server",
        "BRI", "ISDN Basic Rate Interface",
        "BRIMUX", "Cisco AS5200 BRIMUX board",
        "BSC", "Binary Synchronous Communications protocol",
        "BSQ", "Buffer status queue processing",
        "BSR", "Bootstrap router",
        "BSTUN", "Block serial tunneling (BSTUN)",
        "BUNDLES", "Bundles",
        "C1400", "Cisco 1400 platform",
        "C_GIGE", "Dual-port Gigabit Ethernet back card
subsystem",
        "C10K", "Cisco 10000",
        "C10K_APS", "NSP APS",
        "C10KATM", "Cisco 10000 ATM",
        "C10KCARDISSU", "Cisco 10000 Card ISSU",
        "C10KCHE1T1", "Cisco 10000 T1 line card",
        "C10KCHKPT", "Cisco 10000 Checkpoint facility",
        "C10KET", "Cisco 10000 ET",
        "C10KEVENTMGR", "Event Manager subsystem",
        "C10KGE", "Gigabit Ethernet subsystem",
        "C10KHHCT3", "Cisco 10000 HH Channelized T3",
        "C10KINT", "Cisco 10000 interrupt infrastructure",
        "C10KISSU", "Cisco 10000 In Service Software
Upgrade",
        "C10K_IEDGE", "Cisco 10000 iEdge",
        "C10K_LFI_GENERAL", "Cisco 10000 Link Fragmentation
and Interleaving",
        "C10K_MULTILINK_FRAGSIZE_BELOW_MIN_WARNING", "Cisco
10000 PXF Multilink fragment size below minimum warning",
        "C10K_QOS_GENERAL", "Cisco 10000 Quality of Service
(QoS)",
        "C10K_QUEUE_CFG_GENERAL", "Cisco 10000 PXF queuing
configuration",
        "C10K_TOASTER", "Cisco 10000 toaster",
        "C1400_PCI", "Protocol control information (PCI) bus
for Cisco 1400 platform",
        "C1600", "Cisco 1600 platform",
        "C1700", "Cisco 1700 platform",
```

```
        "C1700_EM", "Cisco 1700 VPN module hardware
accelerator for IP security",
        "C1800", "Cisco 1800 platform",
        "C1800_HW_CRYPTO", "Cisco 1800, Cisco 1810 Motorola
SEC 2.0",
        "C2400_DSX1", "Cisco 2400 DSX1 subsystem",
        "C2600", "Cisco 2600 platform",
        "C2600_MAINBOARD_ASYNC_PQUICC", "MPC860 quad
integrated communications controller for the Cisco 2600
platform",
        "C2950", "Catalyst 2950 series switch",
        "C29ATM", "Catalyst 2900XL ATM module",
        "C2KATM", "Catalyst 2820 ATM module",
        "C3200_FE", "Cisco 3200 FEC",
        "C3600", "Cisco 3600 platform",
        "C3800", "Cisco 3800 platform",
        "C3800_ENVM", "Environmental",
        "C3825", "Cisco 3825 platform",
        "C4GWY_DSPRM", "DSP Resource Manager",
        "C4K", "Catalyst 4000 platform",
        "C542", "Voice driver for modular access routers",
        "C5421", "Voice over IP",
        "C54x", "VoIP DSP driver",
        "C54X", "VoIP driver",
        "C5510", "Voice Over IP (VoIP) driver",
        "C5RSP", "Cisco Catalyst 5000 platform",
        "C6KENV", "Cisco Catalyst 6500 environmental
system",
        "C6K_MWAM_CENTRALIZED_CONFIG", "Multiprocessor WAN
Application Module (MWAM) centralized configuration",
        "C6KPWR", "Cisco Catalyst 6500 power control
system",
        "C6MSFC", "C6MSFC (Draco)",
        "C6SUP", "C6SUP-specific",
        "C7200", "Cisco 7200 platform - deleted for 12.2",
        "C7200_TDM", "Cisco 7200 midplane TDM bus",
        "C7600_RSP", "Cisco 7600 Route Switch Processor",
        "C7600_SIP200", "SPA Interface Processor 200",
        "C7600_SIP200_MP", "Cisco 7600, Catalyst 6500 SIP-
200 Multiprocessing",
        "C7600_SIP200_SPIRX", "Cisco 7600, Catalyst 6500
SIP-200 SPI4.2 bus ingress interface",
```

```
        "C7600_SIP200_SPITX", "Cisco 7600, Catalyst 6500
SIP-200 SPI4.2 bus egress interface",
        "C7600_SSC600", "Services SPA Carrier Card
(SSC600)",
        "C830_HW_CRYPTO", "C830 Hifn",
        "C870_FE", "Cisco 870 Fast Ethernet",
        "C870_HW_CRYPTO", "Cisco 850, Cisco 870 Motorola SEC
1.0",
        "C950", "Cisco 950",
        "CAIM", "Compression Advanced Interface Module
(CAIM)",
        "CALL_CONTROL", "Call control",
        "CALL_HOME", "Call Home",
        "CALL_MGMT", "Call management subsystem",
        "CALLPROG", "Call progress notification subsystem",
        "CALLRECORD", "Modem Call Record",
        "CALLTREAT", "Call treatment",
        "CALLTREAT_NOSIGNAL", "Call Treatment (TREAT)",
        "CALLTRKR", "Call Tracker subsystem",
        "CAMP", "Cooperative Asymmetric Multiprocessing",
        "CAPI", "Card API",
        "CAPI_EC", "Card or EtherChannel limitation",
        "CARDMGR", "SIP-400 Card Manager (data plane)",
        "CARRIER", "DFC carrier",
        "CASA", "Cisco Appliance and Services Architecture
(CASA)",
        "CBUS", "CiscoBus controller",
        "CBUS_ATTN", "CMCC CIP for Cisco bus controller
statistics routine",
        "CBUS_WRITE", "CMCC CIP for Cisco bus controller
write support",
        "CCA", "CMCC CIP for channel card adapter",
        "CCH323", "Call Control for H.323",
        "CCPROXY", "H.323 proxy",
        "CDM", "Cable Data Modem subsystem",
        "CDMA_PDSN", "CDMA PDSN",
        "CDNLD_CLIENT", "Client NRP2 configuration
download",
        "CDNLD_SERVER", "Server NSP configuration download",
        "CDP", "Cisco Discovery Protocol (CDP)",
        "CDSX_MODULE", "Network module",
        "CE3", "CE3 port adapter (CE3)",
```

```
        "CEIPNM", "Circuit Emulation over IP Network
Module",
        "CERF", "Cache Error Recovery Function (CERF)",
        "CES", "Circuit Emulation Service (CES)",
        "CES_CLIENT", "Client circuit emulation service
(CESt",
        "CES_CONN", "TDM connection",
        "CFG", "Invalid Cisco 1840 configuration",
        "CFGMGR", "Configuration Manager",
        "CFIB", "Constellation FIB",
        "CFM", "Connectivity Fault Management",
        "CHANNEL_BANK", "Channel Bank",
        "CHARLOTTE", "Dual OC-3 PoS port adapter",
        "CHKPT", "Checkpoint facility",
        "CHOC12", "CHOC12 port adapter",
        "CHOPIN", "Versatile Interface Processor (VIP)
Multi-channel Port Adapter",
        "CHOPIN_MAINBOARD_ASYNC_PQII", "Chopin Main Board
Asynchronous driver",
        "CHSTM1", "CHSTM1",
        "CI", "Cisco 7500 platform chassis interface",
        "CIOS", "CMCC channel adapter Cisco IOS wrapper",
        "CIP and CIP2", "Channel Interface Processor (CIP)
and enhanced CIP",
        "CIPDUMP", "CIP core dump",
        "CIRRUS", "CD2430 asynchronous controller",
        "CIRRUS_PM", "Slow-speed asynchronous/synchronous
port module",
        "CLAW", "CMCC CIP for Common Link Access for
Workstations (CLAW) facility_full",
        "CLEAR", "Clear facility",
        "CLIENT_CLOCK_SYNC", "Clock synchronization server",
        "CLNS", "OSI Connectionless Network Service",
        "CLOCK", "Clock and calendar",
        "CLOCKSW", "Cisco 6400 network clocking",
        "CLS", "Cisco link services (CNS)",
        "CLSDR", "Cisco link services (CNS) driver",
        "CM622_CM155", "ATM OC12 and QOC3 line card driver",
        "CMAPP", "Call Manager application",
        "CMBPKM", "Multimedia Cable Network System Partners,
Ltd. (MNCNS), baseline privacy key management",
        "CMCC", "Cisco Mainframe Channel Connection (CMCC)",
```

```
        "CM_DSPRM", "Digital Signal Processor Resource
Manager (DSPRM)",
        "CM_MONITOR", "UBR900 Cable Access Router Personal
Monitor",
        "CMP", "Cluster Membership Protocol",
        "CMPCTG", "CMCC Logical Link Control Transmission
Group",
        "CNS", "Cisco Networking Services (CNS)",
        "CNS_AGENT_CFGCHG", "Cisco Network Service (CNS)
Configuration Change Agent",
        "CNSAD_IPSEC_AGENT", "Cisco Network Service (CNS)/AD
IPsec Agent",
        "CNSES", "Cisco Network Services Event Service
client",
        "COBALT", "COBALT",
        "COMMON_FIB", "CEF address family independent
(FIB)",
        "COMP", "Point-to-point compression",
        "CONFIG", "CMCC Channel Interface Processor (CIP)
messages for the configuration processing facility",
        "CONST_BOOT", "Constellation boot",
        "CONST_DIAG", "On-line diagnostics",
        "CONST_V6", "IP version 6",
        "CONTROLLER", "Controller",
        "COPTMONMIB", "Cisco Optical Monitoring MIB",
        "COT", "Continuity test (COT)",
        "COUGAR_EHSA", "Pulse amplitude modulation (PAM)
port driver",
        "CP", "Control plane protection notification",
        "CPAD", "Compression service adapter (CSA)",
        "CPE_MMI", "Customer Premises Equipment Modem
Management Interface",
        "CPM", "Combo Port Module (CPM) device driver",
        "CPOS", "Packet-over-SONET",
        "CPU_INTF_FPGA", "CPU Interface FPGA",
        "CPU_MONITOR", "CPU monitor",
        "CRYPTO", "Encryption",
        "CRYPTO_HA", "Crypto High Availability",
        "CRYPTO_HA_IKE", "Crypto High Availability",
        "CRYPTO_HA_IPSEC", "Crypto High Availability",
        "CSG", "Content Services Gateway",
        "CSM", "Call switching module",
```

```
        "CSM_TGRM", "CSM TGRM interaction",
        "CSM_TRUNK", "Call switching trunk manager",
        "CSM_VOICE", "Call switching mode (CSM) voice
subsystem",
        "CT3", "Channelized T3 (CT3) port adapter",
        "CTA", "CMCC CIP for the channel transport
architecture device task/mapper",
        "CTLPROVIDERSERV", "CTL provider service",
        "CTRC", "Cisco Transaction Connection",
        "CWAN_ALARM", "Constellation WAN alarm",
        "CWAN_ATM", "Constellation WAN ATM",
        "CWAN_HA", "WAN module High Availability",
        "CWAN_QINQ", "Constellation CWAN-QINQ linecard",
        "CWAN_RP", "Constellation WAN ATM Route Processor
driver",
        "CWAN_SP", "Constellation WAN ATM Switch Processor
driver",
        "CWAN_SPA", "Shared Port Adapter on OSR",
        "CWANLC", "Constellation WAN line card",
        "CWANLC_ATM", "Constellation WAN ATM Route Processor
driver",
        "CWAN_POSEIDON", "Optical Services Module (OSM) GE-
WAN Route Processor (RP) driver",
        "CWPA", "Route Processor for Constellation
Supervisor router module",
        "CWPABRIDGE", "CWPA bridging",
        "CWRMP", "Wireless radio point-to-multipoint
driver",
        "CWRPSPA", "Shared Port Adapter on OSR RP",
        "CWRSU", "Wireless radio point-to-multipoint
subscriber unit (SU)",
        "CWRTEST", "Wireless radio point-to-multipoint test
driver",
        "CWSLC", "Constellation WAN SiByte module",
        "CWTLC", "Constellation Supervisor router module
line card",
        "CWTLC_ATM", "ATM line card for Constellation
Supervisor router module",
        "CWTLC_ATOM", "Constellation WAN Toaster linecard -
ATOM",
        "CWTLC_CHOC", "Cyclops Channelized OC48/OC12-
related",
```

```
        "CWTLC_CHOC_DSX", "Optical Services Module (OSM)
CHOC DSX LC common",
        "CWTLC_CHOCX", "Optical Services Module (OSM)
Channelized OC12/OC3 Module",
        "CWTLC_GEWAN", "Gigabit Ethernet WAN Module",
        "CWTLC_QOS", "Optical Services Module (OSM)
Supervisor line card QoS",
        "CWTLC_RP", "Catalyst 6500 Series Switch and Cisco
7600 Series Router WAN Toaster-based Module Route
Processor",
        "DAS_ENV", "RSC environmental monitor subsystem",
        "DBCONN", "Database Connection",
        "DBUS", "Data bus",
        "DCU", "ATM access concentrator PCI port adapter",
        "DEBUGGER", "Debug mode",
        "DEC21140", "DEC21140 Fast Ethernet controller",
        "DFC", "Dial feature card",
        "DFC_CARRIER", "Dial feature card carrier",
        "DFP", "Dynamic Feedback Protocol",
        "DHCP", "Dynamic Host Configuration Protocol",
        "DHCP_SNOOPING", "DHCP snooping",
        "DHCPD", "Dynamic Host Configuration Protocol (DHCP)
server",
        "DHCPV6C", "DHCPv6 client",
        "DHCPV6S", "DHCPv6 server",
        "DIAG", "CMCC CIP for diagnostic testing",
        "DIALER", "Dial-on-demand routing",
        "DIALPEER_DB", "Dial peer configuration",
        "DIALSHELF", "Dial shelf",
        "DIRECTOR", "Director server",
        "DISKMIRROR", "NSP disk mirror",
        "DLC", "Data-link control",
        "DLSWC", "Data-link switching (DLSw)",
        "DLSWMasterSlave", "Data-link switching (DLSw)
core",
        "DLSWP", "Data-link switching (DLSw) peer module",
        "DM", "Diagnostic Monitor or Dispatch Manager",
        "DMA", "Direct memory access",
        "DMTDSL", "Digital/discrete multitone digital
subscriber line (DMTDSL)",
        "DNET", "DECnet",
        "DNLD", "Auto-config/download",
```

```
            "DNSSERVER", "Domain Name System (DNS) server",
            "DOSFS", "DOS file system",
            "DOS_TRACK", "IP source tracker",
            "DOT11", "802.11 subsystem",
            "DOT1Q", "802.1q",
            "DOT1X", "802.1X authorization",
            "DOT1X_MOD", "Messages encountered in platform
    dependent code for 802.1x",
            "DP83815", "DP83815 10/100 Mbps Integrated PCI
    Ethernet Media Access Controller",
            "DPM", "AS5200 T1 BRIMUX",
            "DRIP", "Duplicate Ring Protocol",
            "DRP", "Director Response Protocol",
            "DRVGRP", "Interface driver",
            "DS3E3SUNI", "DS3E3SUNI driver",
            "DS_MODEM", "FB modem card",
            "DS_TDM", "Dial shelf time-division multiplexing",
            "DS1337", "DS1337 RTC",
            "DSA", "Delayed stop accounting",
            "DSC", "Dial shelf controller (DSC)",
            "DSC_ENV", "Cisco AS5800 environment monitor",
            "DSC_REDUNDANCY", "Cisco AS5800 dial shelf
    controller (DSC) redundancy",
            "DSCC4", "DSCC4 driver",
            "DSCCLOCK", "Dial shelf controller (DSC) clock",
            "DSCEXTCLK", "Dial shelf controller (DSC) clock",
            "DSCREDCLK", "Dial shelf controller (DSC) redundancy
    clock",
            "DSI", "Cisco AS5800 dial shelf interconnect board",
            "DSIP", "Distributed system interconnect protocol",
            "DSIP_IOSDIAG", "DSIP diagnostic test",
            "DSIPPF", "Nitro Interconnect Protocol",
            "DSLSAR", "DSL segmentation and reassembly",
            "DSM", "DSP Stream Manager",
            "DSMP", "DSP Stream Manager",
            "DSP_CONN", "TDM connection",
            "DSPDD", "Digital Signal Processor Device Driver
    (DSPDD)",
            "DSPDUMP", "Digital Signal Processor crash dump
    facility",
            "DSPFARM", "DSP resource management",
            "DSPRM", "Digital Signal Processor Device Driver
```

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(DSPDD)",
        "DSPU", "Downstream physical unit",
        "DSX0", "CT1 RBS time slot status",
        "DSX1", "Channelized E1 (Europe) and T1(US)
telephony standard",
        "DS_TDM", "Dial shelf time-division multiplexing
(TDM)",
        "DSXPNM", "TE3 network module",
        "DTP", "Dynamic Trunking Protocol filtering",
        "DUAL", "Enhanced Interior Gateway Routing
Protocol",
        "DVMRP", "Distance Vector Multicast Routing
Protocol",
        "E1T1_MODULE", "E1T1 module",
        "EAP", "Extensible Authentication Protocol",
        "EARL", "Enhanced Address Recognition Logic",
        "EARL_ACL_FPGA", "Enhanced Address Recognition Logic
ACL FPGA",
        "EARL_DRV_API", "EARL driver API",
        "EARL_L2_ASIC", "Enhanced Address Recognition Logic
Layer 2 ASIC",
        "EARL_L3_ASIC", "Enhanced Address Recognition Logic
Layer 3 ASIC",
        "EARL_NETFLOW", "Enhanced Address Recognition Logic
NetFlow",
        "EC", "EtherChannel, Link Aggregation Control
Protocol (LACP), and Port Aggregation Protocol (PAGP)",
        "ECC", "Single bit errors in ECC",
        "ECPA and ECPA4", "Escon Channel Port Adapter and
enhanced Escon Channel Port Adapter",
        "EGP", "Exterior Gateway Protocol",
        "EHSA", "Cisco 6400 Enhanced High System
Availability (EHSA)",
        "EM", "Event Manager",
        "EM_FPGA", "Cisco 1840 FPGA encryption, decryption
and hash message authentication codes (HMAC) for IP Security
(IPSec)",
        "ENSP", "Enhanced Network Services Provider (ENSP)",
        "ENT_API", "Entity MIB API",
        "ENT_ALARM", "Entity alarm",
        "ENTITY_ALARM", "Entity alarm",
        "ENVM", "Environmental monitor",
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        "ENV_MON", "Cisco 12000 environmental monitor",
        "ENVM", "Environmental monitor",
        "EOBC", "Ethernet out-of-band channel",
        "EOS", "Eos ASIC",
        "EOU", "Extensible Authentication Protocol (EAP)
over User Datagram Protocol (UDP)",
        "EPAD", "Encryption port adapter driver (EPAD)",
        "EPLD", "EPLD",
        "EPLD_STATUS_OPEN", "EPLD Programming Status File
Data Processing",
        "EPAMCM", "Ethernet Port Adapter Module
Configuration Manager",
        "EPIF_PORT", "MMC Networks Ethernet Port L3
Processor Port",
        "ESCON", "Enterprise Systems Connection",
        "ESF_CRASHINFO", "Extended SuperFrame crashinfo",
        "ESF_DRIVER", "SIP-400 ESF driver",
        "ESF_IPC", "IPX2800 IPC",
        "ESWILP_CFG", "Ethernet switch module
configuration",
        "ESWILP_FLTMG", "ESWILP fault management",
        "ESWITCH", "Ethernet switch port adapter",
        "ESWMOD", "Ethernet switch module",
        "ESWMRVL_FLTMG", "Ethernet switch fault management",
        "ESW_STORM_CONTROL", "Storm control",
        "ESW_WIC_FLTMG", "Ethernet Switch WIC fault
management",
        "ET2_MODULE", "Ernest-T2 network module",
        "ETHERNET", "Ethernet for the C1000 series",
        "EVENT", "Event MIB",
        "EVENT_TRACE", "Event trace subsystem",
        "EXFREE", "External memory manager",
        "EXPRESSION", "Expression MIB",
        "FABRIC", "Fabric Interface ASIC (FIA)",
        "FALLBACK", "Voice over IP (VoIP) fallback",
        "FAN", "Fan",
        "FARM_DSPRM", "Farm DSPRM",
        "FASTBLK", "Fast Block",
        "FB", "Cisco AS5800 feature board",
        "FB_COREDUMP", "Feature board core dump",
        "FBINFO", "Cisco AS5800 feature board crash
information subsystem",
```

```
        "FCIP", "FCIP driver",
        "FCL", "Forward Control Layer (FCL)",
        "FDDI", "Fiber Distributed Data Interface (FDDI)",
        "FDM", "Firewall Service Module (FWSM) Device
Manager",
        "FDM_HA", "High availability FWSM Device Manager",
        "FECPM", "Fast Ethernet (FE) Combination Port Module
(CPM) device driver",
        "FESMIC_FLTMG", "FESMIC fault management-related",
        "FF", "FF module-specific",
        "FIB", "Forwarding Information Base",
        "FIB_HM", "FIB health monitor",
        "FIB_HM_MVL", "Platform dependent, FIB Health
Monitor",
        "FILESYS", "File system",
        "FIO_TDM", "Messages related to the Cisco 3700XM TDM
device",
        "FLASH", "Flash nonvolatile memory",
        "FLEX_DNLD", "Voice Over IP (VoIP) driver",
        "FLEXDSPRM", "Flex DSPRM operation",
        "FM", "Feature Manager (FM)",
        "FM", "Forwarding Manager (FM)",
        "FMCORE", "Core Feature Manager",
        "FM_EARL6", "EARL 6 Feature Manager",
        "FM_EARL7", "EARL 7 Feature Manager",
        "FPD_MGMT", "FPD Management Subsystem",
        "FPGA", "LS1010 chip-specific",
        "FR", "Frame Relay",
        "FR_ADJ", "Frame Relay Adjacency",
        "FR_ELMI", "Frame Relay enhanced Local Management
Interface",
        "FR_FRAG", "Frame Relay Fragmentation",
        "FR_LMI", "Frame Relay Local Management Interface",
        "FR_RP", "Frame Relay RP",
        "FR_VCB", "Frame Relay VC bundle",
        "FRATM", "Frame Relay ATM",
        "FREEDM", "CT3 trunk card Freedm",
        "FS_IPHC", "Fast IP Header Compression",
        "FTC_TRUNK", "Cisco 3801 platform",
        "FTPSERVER", "FTP server processes",
        "FTSP", "Fax Telephony Service Provider subsystem",
        "FTTM", "Full Ternary TCAM Manager",
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```
        "FW", "Inspection subsystem",
        "FW_HA", "Firewall High Availability",
        "FX1000", "FX1000 Gigabit Ethernet controller",
        "GBIC_SECURITY", "GBIC security check",
        "GBIC_SECURITY_CRYPT", "GBIC SECURITY serial EEPROM
verification",
        "GBIC_SECURITY_UNIQUE", "GBIC security uniqueness
verification",
        "GDOI", "Group Domain of Interpretation",
        "GE", "Gigabit Ethernet subsystem",
        "GENERAL", "Zenith route processor",
        "GET_DATA", "CMCC CIP for allocating transfer
elements",
        "GK", "GK-H.323 Gatekeeper",
        "GK_OSP", "H.323 Gatekeeper OSP",
        "GLBP", "Gateway Load Balancing Protocol",
        "GLCFR", "Internet router",
        "GPRSFLTMG", "Global Packet Radio Service fault
management",
        "GPRSMIB", "Global Packet Radio Service MIB",
        "GRIP", "Xerox Network Systems (XNS) Routing
Protocol",
        "GRP", "Gigabit Route Processor",
        "GRP_C10K_CH_DS3", "Cisco 10000 CH-DS3 RP driver",
        "GRP_OC12_CH_DS3", "Gigabit Route Processor (GRP)
driver",
        "GRPGE", "Gigabit Ethernet Route Processor (RP)",
        "GRPPOS", "POS Route Processor",
        "GSHDSL", "G.Symetric High DSL",
        "GSI", "G.Symetric high bit rate DSL",
        "GSR_ENV", "Internet router environment monitor",
        "GSRIPC", "Internet router IPC service routines",
        "GT64010", "GT64010 DMA controller driver",
        "GT64011", "GT64011 DMA controller driver",
        "GT64120", "GT64120 DMA controller driver",
        "GT96K_FE", "Cisco 3700 series and Cisco 3631
systems controller",
        "GT96K_FEWAN", "Cisco 3700 series and Cisco 3631
systems controller for WAN",
        "GT96K_TDM", "Cisco 37xx, Cisco 2691, and Cisco 3631
TDM subsystem",
        "GTP", "GPRS Tunnel Protocol",
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            "GUIDO", "GUIDO network module",
            "HA", "High availability system",
            "HA_CLIENT", "High availability client",
            "HA_EM", "Embedded Event Manager",
            "HA_IFINDEX", "High Availability system",
            "HAL", "Halcyon",
            "HARDWARE", "Hardware resources",
            "HA_WD", "High Availability system",
            "HAWKEYE", "Token Ring PCI port adapter",
            "HD", "HD64570 serial controller",
            "HDLC", "High-Level Data Link Control",
            "HDLC32", "PAS HDLC32",
            "HDV", "High Density Voice (HDV) driver",
            "HDV2", "HDV2 network module",
            "HDX", "Half-duplex (HDX) finite state machines
(FSM)",
            "HEALTH_MONITOR", "Health Monitor",
            "HEARTBEAT", "Heartbeat",
            "HHM", "Cisco AS5400 health monitor",
            "HIFN79XX", "Hifn 79xx",
            "HLFM", "Forwarding Manager",
            "HMM_ASYNC", "Hex modem network module asynchronous
driver",
            "HOOD", "LAN controller 100VG-AnyLAN interface",
            "HP100VG", "100VG-AnyLAN port adapter driver",
            "HPI", "Host Port Interface",
            "HSRP", "Hot Standby Router Protocol (HSRP)",
            "HTSP", "Analog voice hardware adaptation layer
software",
            "HTTP", "Hypertext Transfer Protocol (HTTP)",
            "HTTPC", "HTTP client",
            "HUB", "Cisco Ethernet hub",
            "HW", "Hardware",
            "HW_API", "Hardware API",
            "HW_VPN", "Encryption Advanced Interface Module
(EAIM)",
            "HWECAN", "HWECAN echo canceller",
            "HWIC_1GE_SFP", "Gigabit Ethernet High-speed WAN
Interface Card (HWIC)",
            "HWIC_ADSL", "HWIC ADSL",
            "HWIC_ADSL_BRI", "HWIC ADSL/BRI",
            "HWIC_BRI", "HWIC BRI",
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        "HWIC_HOST", "High-speed WAN Interface Card (HWIC)
Host Driver Library",
        "HWIC_SERIAL", "High-speed WAN Interface Card (HWIC)
Serial Device Driver",
        "HWIF_QOS", "HWIF QoS",
        "HYPERION", "Hyperion ASIC",
        "I82541",      "Intel      82541      Ethernet/Fast
Ethernet/Gigabit Ethernet controller",
        "I82543",      "Intel      82543      Ethernet/Fast
Ethernet/Gigabit Ethernet controller",
        "I82544", "I82544 Fast Ethernet controller",
        "I82559FE", "Intel 82559 Fast Ethernet controller",
        "IAD2420_VOICEPORT", "IAD2420 Voice Port",
        "IBM2692", "IBM Token Ring chipset",
        "ICC", "Inter-Card Communication",
        "IDBINDEX_SYNC", "Interface Descriptor Block (IDB)
index synchronization",
        "IDBMAN", "Interface description block manager",
        "IDCONF", "Intrusion Detection Configuration",
        "IDMGR", "ID manager",
        "IDNLD", "NSP IDNLD",
        "IDS", "IP datagram subsystem (IDS)",
        "IDTATM25", "IDT ATM25 network module",
        "IEDGE", "Intelligent Services Gateway (ISG)",
        "IF", "Interface",
        "IFINDEX", "SNMP IF_MIB persistence",
        "IFMGR", "Interface Manager",
        "IFS", "Cisco IOS file system",
        "IGRP", "Interior Gateway Routing Protocol",
        "ILACC", "ILACC driver",
        "ILPM_FAULT",  "Inline  Power  Management  (ILPM)-
related",
        "ILPOWER", "Inline power",
        "IMA", "Inverse multiplexing over ATM (IMA)",
        "IMAGEMGR", "Image manager",
        "IMAGE_SIMFS", "In-Memory System Image File System",
        "IMAGE_VFS", "Image Virtual File System",
        "INBAND", "Inband management",
        "INDXOBJ", "Index object",
        "INSTANCE_LOG", "Instance log",
        "INT", "CIP for the interrupt handler interface",
        "INTERFACE_API",  "Binary  API  for  the  interface
```

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descriptor block",
        "INTR_MGR", "Interrupt manager",
        "IOCARD", "I/O card-specific",
        "IOS_RESILIENCE", "Cisco IOS software image and
configuration resilience",
        "IP", "Internet Protocol",
        "IP_DEVICE_TRACKING", "Switch IP Host Tracking",
        "IP_DEVICE_TRACKING_HA", "Switch IP Host Tracking
HA",
        "IPA", "Intelligent port adapter",
        "IPACCESS", "IP security",
        "IPC", "Interprocess communication",
        "IPC_DRVR", "CMCC interprocess communication
driver",
        "IPCGRP", "Route Processor (RP) interprocess
communication (IPC)",
        "IPCOIR", "IPC Online Insertion and Removal (OIR)",
        "IPC_RPM", "Interprocess communication (IPC)",
        "IPC_RSP_CBUS", "Interprocess communication ciscoBus
(CBUS)",
        "IPC_URM", "Interprocess communication universal
router module",
        "IPCLC", "Internet router line card interprocess
communication",
        "IPDCAPP", "Internet Protocol Device Control
application",
        "IPFAST", "IP fast switching",
        "IPFLOW", "IP flow",
        "IPM_C54X", "Voice over IP (VoIP) driver",
        "IPM_DSPRM", "Digital Signal Processor (DSP)
Resource Manager",
        "IPM_NV_EEPROM", "Integrated port module NVRAM
driver",
        "IPMCAST", "Cisco 12000 series Internet router line
card IP multicast",
        "IPMCAST_LIB", "IP Multicast library",
        "IPMOBILE", "IP Mobility",
        "IPNAT", "IP Network Address Translation",
        "IPP", "CMCC encryption feature",
        "IPPHONE", "IP Phone register/unregister",
        "IPRT", "IP routing",
        "IPS", "Intrusion prevention system",
```

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        "IPSECV6", "Encryption feature",
        "IP_SNMP", "Simple Network Management Protocol
specific to IP",
        "IPV6", "IP version 6",
        "IPV6FIB", "IP version 6 forwarding-based on
destination IP addresses",
        "IPV6_FW", "IPv6 Inspection subsystem",
        "IPV6_VFR", "IPv6 virtual fragment reassembly
subsystem",
        "IPV6_VRF", "VRF common",
        "IP_VFR", "IP Virtual Fragment Reassembly (VFR)
subsystem",
        "IP_VRF", "IP VPN routing/forwarding instance
common",
        "IPX", "Novell Internetwork Packet Exchange Protocol
(IPX)",
        "IRECAGENTSERVER", "IREC agent server",
        "IRONBUS", "Iron bus",
        "ISA", "Integrated Services Adapter (ISA)",
        "ISDN", "Integrated Services Digital Network
(ISDN)",
        "ISRHOG", "Interrupt Service Routine Hog",
        "ISSU", "In Service Software Upgrade",
        "ISSU_CS", "ISSU configuration synchronization",
        "IUA", "ISDN User Adaptation Layer",
        "IVR", "Interactive Voice Response (IVR)",
        "IVR_MSB", "Media Stream module",
        "IVR_NOSIGNALING", "Interactive Voice Response (IVR)
system messages not related to call signaling",
        "IXP1200_CP", "One port Fast Ethernet with
coprocessor assist",
        "IXP_MAP", "ESF Network Processor Client Mapper",
        "JAGGER", "Constellation WAN line card",
        "JETFIRE_SM", "NAM Sensor network module",
        "KERBEROS", "Voice over IP (VoIP) for Cisco AS5800",
        "KEYMAN", "Keystring encryption",
        "KINEPAK", "Voice over IP (VoIP) for Cisco AS5800",
        "L2", "Layer 2",
        "L2_AGING", "Layer 2 aging",
        "L2_APPL", "Layer 2 application",
        "L2_ASIC", "Layer 2 forwarding engine",
        "L2CAC", "Layer 2 CAC",
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        "L2HW_CM", "Layer 2 hardware connection manager",
        "L2R", "L2RLY",
        "L3_ASIC", "Layer 3 CEF engine",
        "L3MM", "Layer 3 Mobility Manager",
        "L3_MGR", "Layer 3 manager",
        "L3TCAM", "Layer 3 TCAM manager",
        "LANCE", "Local Area Network Controller Ethernet",
        "LANE", "LAN Emulation",
        "LANMGR", "IBM LAN Network Manager",
        "LAPB", "X.25 Link Access Procedure, Balanced",
        "LAPP_OFF", "Fax offramp calls",
        "LAPP_ON_MSGS", "Fax onramp calls",
        "LAT", "DEC local-area transport",
        "LC", "Line card",
        "LC_10G", "Hamptons 10G trunk card",
        "LC_2P5G", "Hamptons 2.6G trunk card",
        "LCB", "Line Control Block (LCB) event process",
        "LCCEF", "ATM Cisco Express Forwarding (CEF)
adjacency",
        "LCCOREDUMP", "Line card core dump subsystems",
        "LCFE", "Fast Ethernet line card (LC) driver",
        "LCGE", "Gigabit Ethernet line card (LC) driver",
        "LCINFO", "Line card crash information subsystem",
        "LCLOG", "Internet router line card logger
subsystem",
        "LCMDC", "ONS 15540 Extended Services Platform",
        "LCOC12_CH_DS3", "Internet router OC-12-channelized-
to-D3 line card",
        "LCPLIM", "Line card physical layer interface
module",
        "LCPOS", "Packet over SONET (POS) line card driver",
        "LCR", "Line card registry",
        "LCRED", "LC and Port redundancy",
        "LDP", "Label Distribution Protocol (LDP)",
        "LES_FDDI", "LAN Emulation Server/Fiber Distributed
Data Interface",
        "LEX", "LAN extension",
        "LFD", "Label Forwarding Database",
        "LFD", "MFI Label Switching Database (LFD)",
        "LIBT2F", "Text to fax library",
        "LIBTIFF", "Tagged Image File Format (TIFF)
library",
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        "LINECARD", "Node Route Processor (NRP) line card",
        "LINEPROTO", "Line Protocol",
        "LINK", "Data link",
        "LLC", "Logical Link Control (LLC), type 2",
        "LLDP", "Link Layer Discovery Protocol",
        "LLIST", "Linked list facility",
        "LNM", "Link noise monitor for the E1T1 module",
        "LNMC", "LAN network manager",
        "LOADER", "CIP for relocating loader facility",
        "LOGIN", "Login",
        "LOVE", "Statistics from the CIP to the router",
        "LPD", "Line printer daemon",
        "LRE", "Long Reach Ethernet for the Catalyst 2950
switch",
        "LSD", "MPLS Forwarding Infrastructure (MFI) Label
Switching Database",
        "LSPV", "MPLS Label-Switched Path Verification",
        "LSS", "LS switching message definition",
        "M32X", "M32X Basic Rate Interface trunk card",
        "MAC_LIMIT", "MAC address table entries",
        "MAC_MOVE", "Host activity",
        "MAILBOX", "ChipCom mailbox support",
        "MARS_NETCLK", "Network clock system",
        "MARVEL_HM", "Platform-dependent health monitor
rules",
        "MASTER_LED", "Master LED",
        "MBRI", "Multi-BRI port modules",
        "MBUF", "CMCC memory buffer",
        "MBUS", "CMCC maintenance bus (MBus)",
        "MBUS_SYS", "Maintenance bus (MBus) system",
        "MC3810_DSX1", "MC3810 DSX1 subsystem",
        "MCAST", "Layer 2 multicast",
        "MCT1E1", "CT1/CE1 shared port adapter",
        "MCX", "Voice port adapter",
        "MDEBUG", "Memory debug",
        "MDR_SM", "Minimum Disruption Restart State
Machine",
        "MDS", "Multicast distributed switching",
        "MDT", "PIM MDT",
        "MDX", " ",
        "MEM_ECC", "Memory write parity errors detected by
ECC control",
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        "MEM_HM", "Memory health monitor",
        "MEMD", "CMCC CIP related to the memory device
facility",
        "MEM_MGR", "Memory management",
        "MEMPOOL", "Enhanced Memory pool MIB",
        "MEMSCAN", "Memory scan",
        "METOPT", "ONS 15540 Extended Services Platform",
        "METS", "Memory-leak analysis",
        "MFI", "MPLS Forwarding Infrastructure",
        "MFIB", "Multicast Forwarding Information Base",
        "MFIB_CONST_LC", "MFIB-Constellation platform",
        "MFIB_CONST_RP", "MFIB Constellation information",
        "MFIB_STATS", "MFIB statistics",
        "MGCP", "Media Gateway Control Protocol (MGCP)",
        "MGCP_APP", "Media Gateway Control Protocol (MGCP)
application-specific",
        "MGCP_RF", "Media Gateway Control Protocol (MGCP)
High Availability",
        "MHA", "Marvel high availability",
        "MHA_LINE", "Marvel high availability line",
        "MHA_MODE", "Marvel high availability",
        "MHA_RF", "Marvel high availability redundancy
feature",
        "MIC", "Port adapter",
        "MICA", "Modem ISDN Channel Aggregation (MICA)",
        "MIF68840", "PCI MC68840 FDDI port adapter",
        "MIMIC", "MCOM integrated modem network modules",
        "MIPC", "Marvel IPC",
        "MISA", "Multiple Crypto Engine subsystem",
        "MISTRAL", "Mistral ASIC",
        "MK5", "MK5025 serial controller",
        "MLD_PROT", "Multicast Listener Discovery",
        "MLOAD", "Module Loader",
        "MLS_ACL_COMMON", "Multilayer switching ACL",
        "MLS_RATE", "Multilayer Switching Rate Limit",
        "MLSCEF", "Multilayer Switching Cisco Express
Forwarding",
        "MLSM", "Multilayer Switching Multicast",
        "MMLS", "Multicast Multilayer Switching",
        "MMLS_RATE", "Multicast Multilayer Switching Rate
Limit",
        "MMODEM", "Integrated modem network module",
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        "MODEM", "Router shelf modem management",
        "MODEM_HIST", "Router shelf modem history and
tracing",
        "MODEM_NV", "Modem NVRAM",
        "MODEM_CALLREC", "Modem call record",
        "MODEMCALLRECORD", "Modem Call Record",
        "MOHAWK_SM", "IDS sensor network module",
        "MONITOR", "Cisco IOS software ROM monitor",
        "MOTCR", "Hardware accelerator for IPSec",
        "MPA68360", "VIP Multi-channel Port Adapter",
        "MPC", "Multipath Channel Protocol",
        "MPF", "Multi-Processor Forwarding (MPF)",
        "MPLS", "Multiprotocol Label Switching",
        "MPLS_ATM_TRANS", "ATM Transport over MPLS",
        "MPLS_PACKET", "MPLS packet",
        "MPLS_TE", "Label Switch Path (LSP) tunnel",
        "MPLS_TE_PCALC", "MPLS TE path calculation
facility",
        "MPOA", "Multiprotocol over ATM (MPOA)",
        "MPLSOAM", "MPLS management",
        "MRIB", "Multicast Routing Information Base",
        "MRIB_API", "MRIB client API",
        "MRIB_PROXY", "MRIB proxy",
        "MROUTE", "Multicast route",
        "MSACDSPRM", "Media Conferencing DSP Resource
Manager",
        "MSC100_SPA_CC", "Cisco 7304 SPA carrier card",
        "MSDP", "Multicast Source Discovery Protocol",
        "MSDSPRM", "Media Services DSP Resource Manager",
        "MSFC2", "Multilayer Switch Feature Card 2",
        "MSFW", "Media Services DSP Firmware Manager",
        "MSG802", "CMCC CIP 802 for IEE 802.2cx LLC
Protocol",
        "MSPI", "Mail Service Provider",
        "MTRIE", "Mtrie",
        "MUESLIX", "Mx serial application-specific
integrated circuit (ASIC)",
        "MV64340_ETHERNET", "MV64340 Ethernet controller",
        "MVR_RP", "Multicast VLAN Registration (MVR) route
processor",
        "MWAM", "Multiprocessor WAN Application Module
(MWAM)",
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        "MWAM_FILESYSTEM", "Multiprocessor WAN Application
Module (MWAM) crashinfo and bootflash file system",
        "MWAM_FLASH", "Multiprocessor WAN Application Module
(MWAM) flash memory",
        "MWAM_FUR", "Multiprocessor WAN Application Module
(MWAM) FUR",
        "MWAM_NVRAM", "Multiprocessor WAN Application Module
(MWAM) NVRAM",
        "MWAM_VRTC", "Multiprocessor WAN Application Module
(MWAM) VTRC",
        "MWR1900_QOS_GENERAL", "MWR1900 Quality of Service
(QoS)",
        "MWR1900_CFG_GENERAL",    "MWR1900    PXF    queuing
configuration",
        "MWR1900_REDUNDANCY", "MWR1900 redundancy",
        "MXT_FREEDM", "8PRI/4T board",
        "NATMIB_HELPER", "NAT MIB helper",
        "NBAR",   "Network-based   application   recognition
(NBAR)",
        "NETFLOW_AGGREGATION", "NetFlow aggregation",
        "NETGX_CRYPTO", "NETGX CRYPTO hardware accelerator
module for IPsec",
        "NET_SERV", "Networking Services",
        "NETWORK_CLOCK_SYNCHRONIZATION",   "Network   clock
synchronization",
        "NETWORK_PORT_SATELLITE", "Network port satellite",
        "NETWORK_RF_API", "Network redundancy feature API",
        "NEVADA", "CMCC CIP interrupt controller",
        "NHRP", "Next Hop Resolution Protocol (NHRP)",
        "NIM", "Network interface module",
        "NM_8_16AM_V2_MODULE", "NM-8/16AM-V2 module",
        "NP", "NextPort (NP)",
        "NP_BS",   "NextPort   (NP)   Bootstrap   and   Crash
Monitor",
        "NP_CLIENT", "NextPort (NP) client",
        "NP_DDSM",  "NextPort  (NP)  Digital  Data  Services
Manager",
        "NP_DSPLIB", "NextPort (NP) DSPLIB",
        "NP_EST", "NextPort (NP) error, status, and trace",
        "NP_MD", "NextPort (NP) modem driver",
        "NP_MM", "NextPort (NP) module manager",
        "NP_SIGLIB", "NextPort (NP) signaling library",
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        "NP_SPE_DS", "NextPort (NP) Dial Shelf Service
Processing Element (SPE) Manager",
        "NP_SSM", "NextPort (NP) Session and Service
Manager",
        "NP_UCODE", "NextPort (NP) microcode",
        "NP_VPD", "NextPort (NP) Voice Packet Driver",
        "NP_VSM", "NextPort (NP) Voice Service Manager",
        "NRP", "Network Routing Processor (NRP)",
        "NRP2", "Network Route Processor, type 2",
        "NRP2_NVMANAGE", "Network Route Processor, type 2
NVRAM management",
        "NRP2_SE64", "SE64 upper and lower layer device
driver",
        "NRP2EHSA", "NRP2 EHSA",
        "NSE", "Network services engine",
        "NSE100", "Network services engine NSE100",
        "NSP", "Network Switch Processor (NSP)",
        "NSP_APS", "Cisco 6400 node switch processor (NSP)",
        "NSP_DISK", "NSP disk",
        "NSP_OIR", "Cisco 6400 online insertion and removal
(OIR)",
        "NSPINT", "Network switch processor (NSP) interrupt
infrastructure",
        "NTP", "Network Time Protocol (NTP)",
        "OBFL", "Onboard Failure Logging",
        "OCE", "Output chain elements",
        "ODM", "Online diagnostics manager",
        "OER_BR", "Optimized Edge Routing (OER) border
router",
        "OER_MC", "Optimized Edge Routing (OER) master
controller",
        "OER_TT_FLOW", "Optimized Edge Routing (OER) top
talkers flow border router",
        "OIR", "Online insertion and removal (OIR)",
        "OLM", "Optical Link Management",
        "ON_DIAG", "Online diagnostics subsystem",
        "ONLINE", "SCP (Switch-module Configuration
Protocol) download processor",
        "ONS15530", "Cisco ONS 15530 trunk card",
        "OOBP", "Out-of-band port (OOBP)",
        "OPTICAL_MONITOR", "Optical monitoring",
        "OSM_MULTILINK", "Optical Services Module (OSM)
```

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distributed multilink",
        "OSPF", "Open Shortest Path First (OSPF)",
        "OSPFv3", "Open Shortest Path First version 3",
        "P2IPC", "Fast IPC event",
        "P2IPC_TRACE", "Fast IPC trace",
        "PA", "Port adapter",
        "PACC", "Cisco 7300 port adapter carrier card
(PACC)",
        "PACC_IPC", "Port Adapter Carrier Card (PACC)
interprocess communication (IPC)",
        "PACKET", "Packet",
        "PAD", "X.25 packet assembler/disassembler",
        "PAGP_DUAL_ACTIVE", "Port aggregation protocol
(PAgP)",
        "PAMMBOX", "Platform-independent PAM mailbox serial
interface",
        "PARSE_RC", "Parser return code",
        "PARSER", "Parser",
        "PBI_OPEN", "Programmable Binary File (PBI) Data
Processing",
        "PBR", "Policy Based Routing",
        "PCI_FE", "PCI Fast Ethernet",
        "PCMCIAFS", "PCMCIA disk",
        "PCPA", "Parallel Channel Port Adapter",
        "PDSN_CLUSTER", "PDSN cluster controller or PDSN
cluster member",
        "PERUSER", "PPP per-user configuration",
        "PF", "Protocol filtering",
        "PFINIT", "Platform initialization",
        "PF_OBFL", "Platform onboard failure logging",
        "PFREDUN", "Policy Feature Card Redundancy",
        "PGM", "Pragmatic General Multicast (PGM)",
        "PGMHOST", "Pragmatic General Multicast (PGM) host
module",
        "PHY", "Physical layer",
        "PIF", "RSC PIF",
        "PIM", "Protocol Independent Multicast",
        "PIMP", "Process interrupt mask profiler",
        "PIMSN", "Protocol Independent Multicast Snooping",
        "PIM_PROT", "Protocol Independent Multicast",
        "PIM_REG_TUN", "PIM register tunnel",
        "PIMSN", "PIM snooping",
```

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        "PINNACLE", "Pinnacle ASIC",
        "PKI", "PKI feature",
        "PLAT_MP", "Platform MP support",
        "PLATFORM", "Platform-specific",
        "PLATFORM_IMAGE _ PREFIX", "Multilayer Switch
Feature Card (MSFC)",
        "PM", "Port Manager",
        "PM3387", "One-port Gigabit Ethernet HWIC-1GE-SFP",
        "PM_DB_HA", "Port management database high-
availability client",
        "PMIP", "WLAN Proxy Mobile IP Subsystem",
        "PM_MODEM_HIST", "Modem history and tracing",
        "PM_MODEM_MAINT", "Modem maintenance",
        "PM_SCP", "Port manager Switch-Module Configuration
Protocol",
        "PMSN", "Port State Machine",
        "PNNI", "Private Network-Network Interface",
        "POLICY_API", "Policy API",
        "POLICY_MANAGER", "Policy Manager",
        "PORT", "Port Management",
        "PORT_SECURITY", "Port security",
        "POS", "Packet over SONET subsystem",
        "POS_GIGE", "Packet over SONET Gigabit Ethernet",
        "POSDW", "Packet over SONET double-wide PCI port
adapter driver",
        "POSLC", "Packet over SONET line card",
        "POT1E1", "Versatile Interface Processor (VIP)
multichannel port adapter",
        "POTS", "Plain old telephone service (POTS)",
        "PPP", "Point-to-Point Protocol (PPP)",
        "PQ3_TSEC", "PQ3 TSEC",
        "PQII", "MPC860 quad integrated communications
controller",
        "PQUICC", "MPC860 quad integrated communications
controller",
        "PQUICC_ASYNC", "Asynchronous MPC860 quad integrated
communications controller",
        "PQUICC_ASYNC_NOMEM", "Integrated Port Module
Asynchronous Driver",
        "PQUICC_ETHER", "Ethernet MPC860 quad integrated
communications controller",
        "PQUICC_ETHERNET", "Ethernet MPC860 quad integrated
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communications controller",
        "PQUICC_FE", "Fast Ethernet MPC860 quad integrated
communications controller",
        "PQUICC_SERIAL", "Serial MPC860 quad integrated
communications controller",
        "PQUICC3", "MPC8500 PowerQUICC3",
        "PRBS", "Pseudo-random bit sequence",
        "PROCYON", "CPU daughter card for the Supervisor
Engine 720",
        "PS", "Power supply",
        "PTRANSFORM", "Protocol transformation",
        "PT", "Protocol Translation",
        "PV", "Private VLAN",
        "PVDM2", "PVDM2 SIMM",
        "PW_WATCHER", "Portware Watcher",
        "PXF", "Parallel eXpress Forwarding (PXF)",
        "PXF_ACL", "Parallel eXpress Forwarding (PXF) ACL-
specific",
        "PXFAPI", "Parallel eXpress Forwarding (PXF) API-
related",
        "PXF_DMA", "Parallel eXpress Forwarding (PXF) DMA
subsystem",
        "PXF_FIB", "Parallel eXpress Forwarding (PXF) FIB
select-specific",
        "PXF_FLOW", "Parallel eXpress Forwarding (PXF)
Netflow-related",
        "PXF_GEC", "PXF EtherChannel",
        "PXF_GRE", "Parallel eXpress Forwarding (PXF) GRE
tunnel-related",
        "PXF_NAT", "Parallel eXpress Forwarding (PXF)
Network Address Translation (NAT)-related",
        "PXF_QOS", "Parallel eXpress Forwarding (PXF)
Quality of Service (QoS)-related",
        "PXF_VRFS", "Parallel eXpress Forwarding (PXF) VRF
selection-specific",
        "QA", "Queue and accumulator",
        "QEM", "QEM driver",
        "QLLC", "Qualified Logical Link Control",
        "QM", "Quality of service management",
        "QNQ", "Q-in-Q",
        "QOS", "Quality of Service",
        "QOSMGR", "Quality of Service (QoS) manager",
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        "QUICC", "MC68360 quad integrated communications
controller",
        "QUICC_ASYNC", "Asynchronous MC68360 quad integrated
communications controller",
        "QUICC_ETHER", "Ethernet MC68360 quad integrated
communications controller",
        "QUICC_SERIAL", "Serial MC68360 quad integrated
communications controller",
        "R4K_MP", "Central processing unit",
        "RAC", "Ring Access Controller",
        "RADIO", "Radio driver",
        "RADIO_DRIVER", "Radio driver",
        "RADIUS", "RADIUS",
        "RADIX", "Radix",
        "RADSRV", "Embedded RADIUS server",
        "RAIKO", "RAIKO-based feature board",
        "RANDOM", "Random number generator",
        "RASP16", "Interface Multiplexer ASIC",
        "RBCP", "Router Blade Control Protocol",
        "RCMD", "Remote command",
        "RE", "RE subsystem",
        "RECONCILIATION_HA", "Reconciliation high
availability",
        "RED", "Redundancy-related",
        "RED_MODE", "High-availability redundancy mode",
        "RED_REMOTE", "Redundancy remote",
        "REDUNDANCY", "High Availability redundancy",
        "REDUNDANCY_UTILS", "High Availability redundancy
utilities",
        "Regen", "Cisco optical regenerator",
        "Regen_MAINBOARD_ASYNC_PQUICC", "Asynchronous MPC860
quad integrated communications controller for the Cisco
optical regenerator",
        "REGISTRY", "Registry",
        "RESOURCE_MGR", "Resource manager",
        "RESOURCE_MON", "Resource monitor subsystem",
        "RESYNCH", "Route Processor Module (RPM)
resynchronization process",
        "RF", "Redundancy facility_full",
        "RF_INTERDEV", "Redundancy facility (RF)
interdevice",
        "RF_ISSU", "Redundancy facility (RF) In Service
```

```
Software Upgrade",
        "RFS", "Remote file system",
        "RIM", "Redundant Interface Manager (RIM)",
        "RIP", "IP Routing Information Protocol (RIP)",
        "RITE", "IP traffic export",
        "RLM", "Redundant Link Manager (RLM)",
        "RM", "Resource Manager",
        "RMON", "Remote Monitoring Protocol",
        "ROUTEMAP", "Route map",
        "ROUTEMAP_IPC", "Route map interprocess
communication (IPC)",
        "RPA", "Resource Pool Allocation (RPA)",
        "RPC", "Remote Procedure Call (RPC)",
        "RPF", "Multicast RPF",
        "RPM", "Route Processor Module (RPM)",
        "RPB_BKCD", "RPM back card",
        "RPM_BULK", "RPM-specific bulk file",
        "RPM_CONFIG_COPY", "RPM config copy feature",
        "RPM_CONN_MGMT", "RPM Connection Management-
related",
        "RP_MLP", "Distributed Point-to-Point Protocol (PPP)
Multilink",
        "RPM_RED", "RPM redundancy",
        "RPM_TRAP_CLIENT", "RPM trap client",
        "RPM_VIRTUAL", "Route Processor Module (RPM) virtual
port",
        "RPM_VIRTUAL_PORT", "RPM virtual port",
        "RPMXF", "Route Processor Module, express forwarding
(RPM-XF) card level",
        "RPMXF_DMLP", "Route Processor Module, express
forwarding DMLP configuration",
        "RPMXF_QOS_GENERAL", "Route Processor Module,
express forwarding (RPM-XF) Quality of Service (QoS)",
        "RPMXF_QUEUE_CFG_GENERAL", "Route Processor Module,
express forwarding (RPM-XF) queuing configuration",
        "RPMXF_QUEUE_CFG_STR", "Route Processor Module,
express forwarding (RPM-XF) queuing configuration",
        "RPMXF_TOASTER", "Route Processor Module, express
forwarding (RPM-XF) Toaster",
        "RPMXFEVENTMGR", "Route Processor Module, express
forwarding (RPM-XF) event manager subsystem",
        "RPS", "Redundant power system",
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        "RS_TDM", "Router shelf time-division multiplexing",
        "RRR_PCALC", "Routing with Resource Reservation
(RRR) path calculation",
        "RSC", "Route Switch Controller (RSC)",
        "RSC_CF", "Compact flash error",
        "RSC_FPFE_IOSDIAGS", "RSC front panel Fast Ethernet
IOS diagnostics",
        "RSC_MBUS", "MBus on RSC",
        "RSC_PIF_IOSDIAGS", "Cisco IOS diagnostic test",
        "RSCMSM", "Resource Measurement",
        "RSCPB", "RSC push button",
        "RSP", "Route Switch Processor",
        "RSP_ISSU", "Cisco 7500 In Service Software Upgrade
system",
        "RSRB", "Remote source-route bridging",
        "RSVP", "RSVP protocol",
        "RSVP_HA", "RSVP protocol high availability",
        "RTT", "Round-trip time monitor",
        "RUDP", "Reliable User Datagram Protocol",
        "RUNCFGSYNC", "Auto-Running Configuration
Synchronization",
        "RVTCVT_INFO", "RVT/CVT Runtime Informational
messages",
        "RW_TOO_LONG", "Windstar MPLS rewrite",
        "S4T68360", "Four-port synchronous serial adapter
based on the 68360 processor",
        "SASL", "Simple Authentication and Security Layer",
        "SARMGR", "Segmentation and reassembly (SARMGR)",
        "SATVS", "Satellite Switch Virtual Switch (VS)",
        "SBETH", "MAC controller (SBETH)",
        "SBFIFO", "Packet first-in, first-out (FIFO) MAC
controller",
        "SCCP", "Signaling connection control part",
        "SCHED", "Scheduler",
        "SCP", "Downstream physical unit (DSPU)",
        "SDEE", "SDEE subsystem",
        "SDLC", "Synchronous Data Link Control",
        "SDLLC", "Synchronous Data Logical Link Control
(SDLLC) Logical Link Control Type 2 (LLC2) translation",
        "SDP", "Session Description Protocol",
        "SDLC", "GSHDSL",
        "SDM", "Security Device Manager",
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        "SDSPFARM", "SDSP FARM register and unregister",
        "SEC", "IP security",
        "SEC_LOGIN", "Secure login",
        "SENSOR", "Voltage and temperature sensor",
        "SERIAL", "WS SERIAL line card",
        "SERVER_CLOCK_SYNC",      "Clock      synchronization
service",
        "SERVICE_MODULE", "Service module",
        "SERVICEMODULE", "Service module monitor",
        "SFF8472", "Floating-point subsystem (SFF8472)",
        "SFP", "SFP",
        "SFP_SECURITY", "SFP Security",
        "SGBP", "Stack Group Bidding Protocol",
        "SGCP", "Simple Gateway Control Protocol (SGCP)",
        "SGCP_APP", "Simple Gateway Control Protocol (SGCP)
application-related",
        "SGPRSWARNING", "SGPRS warning",
        "SHELF", "Router shelf",
        "SHMWIN", "Shared memory",
        "SIBYTE", "SiByte processor complex",
        "SIGSM", "Signaling Service Manager",
        "SIP", "Session Initiation Protocol",
        "SIP200", "SPA Interface Processor 200",
        "SIP400", "SPA Interface Processor 400",
        "SIP600", "SPA Interface Processor 600",
        "SIP600_PARSING_ENGINE", "SIP-600 parsing engine",
        "SIP600_QOS", "SIP-600 QoS",
        "SIPSPA", "Shared Port Adapter on GSR line card",
        "SKINNYSECURESERVER", "Skinny secure server",
        "SKINNYSECURESERVICE", "Skinny secure service",
        "SKINNYSERVER", "Skinny server",
        "SLB", "Server load balancing",
        "SLB_DFP", "Server Load Balancing Dynamic Feedback
Protocol agent",
        "SLICE_TOASTER", "Slice",
        "SLIP", "Serial Line Internet Protocol",
        "SLOT", "AS5850 slot state machine and OIR-related
events",
        "SLOT_FPD", "Common line card FPD",
        "SLOT_HM", "RSC slot health monitor",
        "SLOTDUMP", "Slot dump",
        "SM", "State machine (SM)",
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        "SMC", "Services Management Channel",
        "SMF", "Software MAC Filter",
        "SMIC", "2FE2W, 1FE2W, 1FE1R2W, 2W network module-
related",
        "SMRP", "Simple Multicast Routing Protocol",
        "SMSC_RP", "Short message service center route
processor",
        "SNAPSHOT", "Snapshot dial-on-demand routing",
        "SNASW", "Systems Network Architecture (SNA)
Switching Services",
        "SNMP", "Simple Network Management Protocol (SNMP)",
        "SNMP_BULKSTAT", "SNMP bulk-data collection",
        "SNMP_MGR", "Simple Network Management Protocol
(SNMP) proxy",
        "SOI", "Simple Network Management Protocol (SNMP)
over interprocess communication (IPC)",
        "SONET", "Synchronous Optical Network",
        "SONETMIB", "Synchronous Optical Network Management
Information Base",
        "SONICT", "SONIC Ethernet driver",
        "SPA", "Shared Port Adapter (SPA)",
        "SPA_CCB", "SPA CCB command",
        "SPA_CHOC_DSX", "Common Channelized Shared Port
Adapter",
        "SPA_CHOCX", "Common Channelized Shared Port
Adapter",
        "SPA_CHOCX_CWRP", "Common Channelized Shared Port
Adapter",
        "SPA_CONSOLE", "Shared Port Adapter (SPA) virtual
console",
        "SPA_CT3", "CT3 Shared Port Adapter",
        "SPA_DATABUS", "SPA data bus interface",
        "SPA_EEPROM", "Shared Port Adapter (SPA) EEPROM",
        "SPA_ETHER", "Ethernet Shared Port Adapter",
        "SPA_FPD", "Shared Port Adapter (SPA) field-
programmable device (FPD)",
        "SPA_HA", "SPA High Availability",
        "SPA_IPSEC", "IPsec SPA Card (SPA-IPSEC)",
        "SPA_MIB", "SPA MIB",
        "SPA_OIR", "Shared Port Adapter (SPA) online
insertion and removal (OIR)",
        "SPA_PLIM", "Shared Port Adapter (SPA) physical
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layer interface module",
        "SPA_PLUGIN", "Shared Port Adapter (SPA) plugin",
        "SPA_PMB", "SPA specific power management bus",
        "SPA_T3E3", "Shared Port Adapter (SPA) T3E3",
        "SPACP", "SPA CP",
        "SPAN", "Spanning Tree Protocol",
        "SPANTREE", "Spanning Tree",
        "SPANTREE_FAST", "Spanning Tree Fast Convergence",
        "SPANTREE_VLAN_SW", "Spanning Tree VLAN switch",
        "SPARC", "3800 SPARC coprocessor subsystem",
        "SPE", "Service Processing Element (SPE)",
        "SRC", "Switch Redundancy Controller",
        "SRCP_APP", "Simple Resource Coordination Protocol
(SRCP) application",
        "SRP", "Spatial Reuse Protocol (SRP)",
        "SRPMIB", "Spatial Reuse Protocol (SRP) MIB",
        "SSA", "Super Santa Ana ASIC",
        "SSE", "Silicon switching engine",
        "SSG", "Service Selection Gateway",
        "SSH", "Secure Shell (SSH) Protocol",
        "SSI", "SSI event",
        "SSLVPN", "SSL-based VPN",
        "SSP", "State Synchronization Protocol Manager",
        "SSRP", "SONET/SDH based SRP Double Wide PCI port
adapter driver",
        "SSSMGR", "Subscriber Service Switching (SSS)
Manager",
        "STACKMGR", "Stack manager controller",
        "STAPL_OPEN", "Standard Test And Programming
Language (STAPL) Processing",
        "STANDBY", "Hot Standby Router Protocol (HSRP)",
        "STORM_CONTROL", "Storm control",
        "STRING", "String database",
        "STUN", "Serial tunneling",
        "SUBSYS", "Software subsystems",
        "SUPERVISOR", "Supervisor",
        "SUPQ", "Supervisor queue",
        "SUPW_PROCMIB", "Supervisor MIB",
        "SVCLC", "Service line card (SVCLC) firewall SP",
        "SW56", "Switch 56K",
        "SW_DAI", "Dynamic ARP Inspection",
        "SWEPA", "Software encryption port adapter and key
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management",
        "SWITCH", "Switch interface",
        "SWITCH_IF", "Switch interface subsystem",
        "SWITCHOVER", "Line card switchover-related",
        "SWITCH_QOS_TB",   "Quality   of   Service   rusted
boundary",
        "SW_MGR", "Segment switch manager",
        "SW_VLAN", "Virtual LAN (VLAN) manager",
        "SYS", "Operating system",
        "SYSCTLR", "System controller subsystem",
        "SYSLOGD", "System logging",
        "SYSLOG_SERVER",    "Syslog-server    file    system
routines",
        "SYSMGR", "System Manager",
        "SYSMGR_PLATFORM",   "Cisco   Catalyst   6500   system
manager process",
        "SYSMGT_RPC", "System management",
        "SYSTEM_BUS_ASIC", "System Bus Translator ASIC",
        "SYSTEM_CONTROLLER", "System controller",
        "SYSTEM_HM", "System health monitor",
        "T1E1SUNI", "PAM port driver",
        "TAC",  "Terminal  Access  Controller  Access  Control
System",
        "TAGCON", "Tag distribution and control",
        "TAGCOS", "Tag switching class of service",
        "TAR_FS", "Tar file system",
        "TBRIDGE", "Transparent bridging",
        "TCAM_MGR", "TCAM manager",
        "TCAMMGR", "TCAM manager",
        "TCATM", "ATM tag control",
        "TCMIPC", "Toaster-RP IPC-related",
        "TCMSP", "Call control for telephony-style hardware
interfaces",
        "TCP", "Transmission Control Protocol",
        "TDM", "Time-division multiplexing (TDM)",
        "TDM_CLOCK_SYNCHRONIZATION",          "Time-division
multiplexing (TDM) frame clock",
        "TDM_CONN", "TDM connections",
        "TDP", "Tag Distribution Protocol",
        "TENGIGE_LC", "10-Gigabit Ethernet line card",
        "TESTPA", "TestPA port adapter",
        "TFIB", "Tag Forwarding Information Base",
```

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        "TI1570", "PCI/TI1570-based ATM port adapter",
        "TIB", "Tag Information Base",
        "TID_HA", "Table ID High Availability (HA)",
        "TIDP", "Threat Information Distribution Protocol",
        "TIGER", "Error-correcting code (ECC) and parity-
related",
        "TINY_FRAG_POLICER", "Tiny frag policer",
        "TLV", "EEPROM",
        "TMS", "Threat Management Service",
        "TMQ", "Inbound terminal port queuing",
        "TN", "Telnet",
        "TN3270", "TN3270 protocol",
        "TOASTER_CP", "Toaster-based coprocessor assist",
        "TOASTER_IPC", "Toaster interprocess communication",
        "TOPN_COUNTERS", "Switch TopN report counters",
        "TPLUS", "TACACS Protocol",
        "TR", "Token Ring",
        "TRANSCEIVER", "Transceiver module",
        "TRINITY", "Trinity System",
        "TRUNK", "E1/T1 trunk card",
        "TRUNK_CLOCK", "AS5400 clocking",
        "TRUNK_DFC", "Trunk dial feature card",
        "TRUNK_SERIAL", "Trunk serial device",
        "TSP", "Tag-switched path (TSP)",
        "TTFIB_NP_CLIENT", "Toaster Tag FIB (TTFIB) NP
client",
        "TTY", "Tty-related for all platforms",
        "TTYDRIVER", "Router shelf asynchronous driver",
        "TUN", "Tunnel",
        "TUNSS", "Tunnel security",
        "TURBORSC", "Platform-specific RSC",
        "TWOBT", "WS 2BT protocol driver",
        "TWO_GIGE", "Two Gigabit Ethernet subsystem",
        "TXCONN", "Cisco Transaction Connection (CTRC)",
        "UBL", "Universal Boot Loader",
        "UBR7200", "Cable modem termination system",
        "UBR900", "Cisco uBR900 Series Cable Access
Routers",
        "UCODE", "Microcode",
        "UDLD", "UniDirectional Link Detection (UDLD)
protocol",
        "UNICAST_FLOOD", "Unicast flooding",
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```
            "UNIX", "UNIX",
            "UNIXRP", "UNIX RP",
            "UPS", "Uninterruptible power supply",
            "URLF", "URL filtering subsystem",
            "USBFLASH", "USB flash device",
            "USB_HOST_STACK", "USB host stack",
            "USB_TOKEN", "USB security token",
            "USB_TOKEN_FILESYS", "USB Token File System",
            "UTIL", "Utility",
            "VACL", "VLAN ACL",
            "VALENCIA", "Valencia ASIC on Services SPA Carrier
Card (SSC-600)",
            "VFC", "Voice over IP (VoIP)",
            "VINES", "Banyan VINES",
            "VIP", "Versatile Interface Processor",
            "VIP_MDR", "Versatile Interface Processor Minimum
Disruption Restart system",
            "VIPMLP", "Multilink PPP",
            "VOA", "Hamptons variable optical attenuator (VOA)
card",
            "VOICE_ELOG", "Voice event logger",
            "VOICE_FSM", "MC3810 voice FSM subsystem",
            "VOICE_IEC", "Voice internal error code (IEC)",
            "VOICE_RC", "MC3810 voice resource subsystem",
            "VOICE_UTIL", "Voice call control utilities",
            "VOIPAAA", "VoIP AAA",
            "VOIPFIB", "VoIP FIB",
            "VOLANT", "Content engine NM",
            "VPA", "Voice port adapter",
            "VPD", "ATM CES (Voice Processor Deck) driver",
            "VPDN", "Virtual Private Dialup Networking",
            "VPLS_NP_CLIENT", "Virtual Private LAN Service NP
client",
            "VPN_HW", "VPN hardware accelerator",
            "VPNSM", "VPN Services Module",
            "VPNSMIOS", "VPNSM crypto connection",
            "VPNSMIOSSP", "VPNSM crypto connection SP",
            "VRM", "Voice Resource Management",
            "VRRP", "Virtual Router Redundancy Protocol",
            "VSAT", "Satellite Module",
            "VSEC", "VLAN security violation",
            "VS_GENERIC", "Virtual switch",
```

```
            "VSL", "Virtual switch link",
            "VSI_M", "Virtual switch interface (VSI) master",
            "VSL_BRINGUP", "Virtual switch link bringup",
            "VSLP", "Virtual Switch Link Protocol",
            "VS_MOD", "Virtual switch module provisioning",
            "VS_PARSE", "Virtual switch",
            "VS_QOS_ACL", "Virtual switch QoS ACL",
            "VSTATS", "Voice statistics push data",
            "VTSP", "Voice telephony security parameter index
    (SPI)",
            "WA_ENGINE", "WA engine network module",
            "WARMUPGRADE", "Warm upgrade feature",
            "WCCP", "Web Cache Communication Protocol (WCCP)",
            "WIC_AM", "WIC-AM modem initialization",
            "WiSM", "WiFi services module",
            "WLAN_CONTROLLER", "WLAN controller network module",
            "WLCCP_WDS", "Wireless LAN Context Control Protocol
    (WLCCP) for WDS",
            "WS_ALARM", "Windstar alarm",
            "WSHTF", "HT_FPGA data plane driver",
            "WSIPC", "Windstar IPC",
            "X25", "X.25",
            "XCCTSP_VOICE", "External Call Control Telephony
    Service Provider",
            "XCPA", "Mainframe Channel Port Adapter",
            "XCVR", "Transponder",
            "XDR", "eXternal Data Representation",
            "XDSDLWIC", "Cisco 2600 series and 3600 series xDSL
    drivers",
            "XTAGATM", "Extended Tag ATM (XTagATM)",
            "Y88E8K", "Yukon 88E8000 E/FE/GE controller",
            "ZAM", "Zenith Alarm Management"
          ]
        } # translate
      } # if
    } # filter
```

6) 02_output_cisco.conf

```
    output {
      # Jika filter bermasalah akan di simpan di dalam file
      if "_grokparsefailure" in [tags] { file { path =>
    "/tmp/fail-%{type}-%{+YYYY.MM.dd}.log"
```

```
    }
  }

  # Jika filter berhasil maka akan di simpan di dalam
elasticsearch.
  if "cisco-ios" in [tags] {
    stdout{
   codec => rubydebug
    }
    # untuk menyimpan ke dalam file
    #file {
    #  path => "/tmp/%{type}-%{+YYYY.MM.dd}.log"
    #}
    elasticsearch {
      hosts          => ["localhost:9200"]
      manage_template => false
      index          => "syslog-%{[host][ip]}"
      document_id    => "%{fingerprint}"
      user           => "elastic"
      password       => 'yourPassword'
    }#elasticsearch
    if [log_level] <= 5 {
    http {
      #ecs_compatibility => disabled
      format => "json"
      http_method => "post"
      url                                                  =>
"https://api.telegram.org/bot1900921360:AAEa2r3krpVRvueBq7Ef
83MTWGROQzZZdj0/sendmessage"
      mapping => {
          "chat_id" => "-1001335596265"
          "text" => "%{hostname}
%{log_level_detail}
%{facility_full}
%{message}"
      }
    }
    }#if critical

  }#if cisco-ios
}#output
```

7) Filter-cpu.rb

```
def register(params)
        @indexCpu = params["index"]
        @nameCpu = params["name"]
        @availCpu = params["avail"]
end

def filter(event)
        require 'elasticsearch'
        index = event.get(@indexCpu)
        naaame = event.get(@nameCpu)
        avail = event.get(@availCpu)
   hostname = event.get("hostname")
        tags = event.get("tags")
        tags[3] = "cpu"
        time = event.get("@timestamp")
        indeex = "snmp-#{tags[0]}"

        client     =     Elasticsearch::Client.new(     url:
"http://elastic:jarvis123@localhost:9200")

        interfaceAll = {}

        index.each_with_index do |i, x|
                i = i.merge(avail[x])
         nameHardware         =         cekHardware(naaame,
i["cpmCPUTotalPhysicalIndex"])
         i.delete("cpmCPUTotalPhysicalIndex")
         i[:availCpu] = i.delete("cpmCPUTotal5min")
                i.store("nameCpu",nameHardware)
         i.store("hostname",hostname)
                i.store("tags",tags)
                i.store("@timestamp",time)
#        event.set("tes",i)

                client.index(index: indeex, body: i)
        end
        return [event]
end

def cekHardware(name, physicalIndex)
   name.each_with_index do |i, x|
```

```
            if i["index"].to_i == physicalIndex
                  return i["entPhysicalName"]
            end
      end
   end
```

8) Filter-interface.rb

```
   #require 'elasticsearch'
   #client      =      Elasticsearch::Client.new(      url:
   "http://elastic:jarvis123@localhost:9200")
   def register(params)
         @intStatus = params["OperStat"]
         @intName = params["name"]
         @intIn = params["octIn"]
         @intOut = params["octOut"]
      @hostInt = params["host"]
      @intAlias = params["alias"]
   end

   def filter(event)
      require 'elasticsearch'
         status = event.get(@intStatus)
         name = event.get(@intName)
         iin = event.get(@intIn)
         out = event.get(@intOut)
      hostname = event.get(@hostInt)
      desc = event.get(@intAlias)
      tags = event.get("tags")
      tags[3] = "interface"
      time = event.get("@timestamp")
      index = "snmp-#{tags[0]}"

      #client = Elasticsearch::Client.new
      client      =      Elasticsearch::Client.new(      url:
   "http://elastic:jarvis123@localhost:9200")

   #  interfaceAll = {}

      status.each_with_index do |i, x|
            interface = {}
                        if i["ifOperStatus"] == 1
```

```
                        interface.store("hostname",hostname)
                        interface.store("tags",tags)
                        interface.store("@timestamp",time)

      interface.store("nameInt",name[x]["ifName"])

      interface.store("statusInt",status[x]["ifOperStatus"])

      interface.store("inInt",iin[x]["ifHCInOctets"])

      interface.store("outInt",out[x]["ifHCOutOctets"])

      interface.store("descInt",desc[x]["ifAlias"])
                        client.index(index:     index,     body:
   interface)
                              end
            end
            return [event]
   end
```

9) Filter-Memmory.rb

```
   def register(params)
            @memName = params["name"]
            @memFree = params["free"]
      @memUse = params["use"]
   end

   def filter(event)
            require 'elasticsearch'
            nameMem = event.get(@memName)
            freeMem = event.get(@memFree)
            useMem = event.get(@memUse)
      hostname = event.get("hostname")
            tags = event.get("tags")
            tags[3] = "memmory"
            time = event.get("@timestamp")
            indeex = "snmp-#{tags[0]}"

            client     =     Elasticsearch::Client.new(     url:
   "http://elastic:jarvis123@localhost:9200")

   #         interfaceAll = {}
```

```
        nameMem.each_with_index do |i, x|
         data = {}

   data.store("nameMem",nameMem[x]["ciscoMemoryPoolName"])

data.store("freeMem",freeMem[x]["ciscoMemoryPoolFree"])

   data.store("useMem",useMem[x]["ciscoMemoryPoolUsed"])

         totalMem   =   freeMem[x]["ciscoMemoryPoolFree"]   +
useMem[x]["ciscoMemoryPoolUsed"]
         avaMem   =   useMem[x]["ciscoMemoryPoolUsed"].to_f   /
totalMem.to_f
         data.store("totalMem", totalMem)
         data.store("avaMem",avaMem)

         data.store("hostname",hostname)
                data.store("tags",tags)
                data.store("@timestamp",time)
#        event.set("tes",data)

                client.index(index: indeex, body: data)
        end
        return [event]
end
```