YANG Groupings for Transmission Control Protocol (TCP) Configuration
draft-scharf-tcpm-yang-tcp-02

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Motivation for a TCP YANG model

- Emerging related YANG models
  - TCP functions such as keepalives, e.g. draft-ietf-netconf-tcp-client-server-02
  - TCP parameters such as MSS, e.g. draft-ietf-idr-bgp-model-06
- Mostly parameters exposed by socket options
- How to deal with other TCP configuration?
  - Global configuration for all TCP connections
  - Interface-specific configuration (possibly MSS/MTU)
  - Connection-specific parameters (e.g., TCP_NODELAY)
  - Policies / profiles / templates

```
module: ietf-tcp-common

grouping tcp-common-grouping
  +-- keepalives! {keepalives-supported}?
    +-- idle-time               uint16
    +-- max-probes              uint16
    +-- probe-interval          uint16

module: draft-ietf-netconf-tcp-client-server-02

grouping tcp-connection-grouping
  +-- keepalives! {keepalives-supported}?
    +-- idle-time               uint16
    +-- max-probes              uint16
    +-- probe-interval          uint16

draft-ietf-netconf-tcp-client-server-02
```
## Configuration similarities among TCP Stacks?

**High-level informal survey on 4 different (anonymous) TCP stacks**

<table>
<thead>
<tr>
<th>Configuration example</th>
<th>Good match</th>
<th>Similar parameter but deviations</th>
<th>Sum</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keepalives</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Idle-time (in seconds): integer</td>
<td>1</td>
<td>1 in msec</td>
<td>2</td>
<td>Also supported as socket option</td>
</tr>
<tr>
<td>• Probe-interval (in seconds): integer</td>
<td>1</td>
<td>1 in msec</td>
<td>2</td>
<td>Also supported as socket option</td>
</tr>
<tr>
<td>• Max-probes: integer</td>
<td>2</td>
<td></td>
<td>2</td>
<td>Also supported as socket option</td>
</tr>
<tr>
<td>Maximum MSS (in byte): integer</td>
<td>1</td>
<td>1 as input to PMTUD</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>FIN timeout (in seconds): integer</td>
<td>3</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SACK (disable/enable): boolean</td>
<td>3</td>
<td></td>
<td>3</td>
<td>Modeled as type empty in 1 stack</td>
</tr>
<tr>
<td>Timestamps (disable/enable): boolean</td>
<td>3</td>
<td>1 as enumeration</td>
<td>4</td>
<td>Modeled as type empty in 1 stack</td>
</tr>
<tr>
<td>Path MTU Discovery (disable/enable): boolean</td>
<td>3</td>
<td>1 as enumeration</td>
<td>4</td>
<td>Modeled as type empty in 1 stack</td>
</tr>
<tr>
<td>ECN</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Enabling (disable/passive/active): enumeration</td>
<td>2</td>
<td>1 as boolean</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Not included: Connection-specific parameters (i.e., socket options such as TCP_NODELAY)

→ Configuration similarities for fundamental TCP functionality
Example for a potential model

Potential YANG grouping for SACK:

```yang
grouping tcp-sack-grouping {
    description "Support of Selective Acknowledgements (SACK)";

    leaf sack {
        type boolean;
        default "true";
        description "Enable support of Selective Acknowledgements (SACK)";
    }
}
```

Potential use of such a YANG grouping for a TCP stack configuration:

```yang
... grouping example-tcp-config {
    description "Example TCP stack configuration";
    uses tcp-common-grouping;
    uses tcp-sack-grouping;
}
...```

---

draft-scharf-tcpm-yang-tcp
Other TCP parameters

- **Modeling differences between stacks**
  - Delayed ACK timeout (in ms)
  - Initial RTO value (in ms)
  - Maximum number of retransmissions
  - Window scaling
  - Maximum number of connections
  - ... (others following from the spec)

- **Significant dependency on stack internals**
  - Window size (segment vs. bytes)
  - Buffer sizes and flow control
  - Timers
  - Congestion control algorithms
  - ...
Summary and next steps

- Major changes in draft-scharf-tcpm-yang-tcp-02
  - Alignment with draft-ietf-netconf-tcp-client-server
  - New list of (somewhat) common TCP configuration parameters
  - Vishal as new co-author

- Potential next step: Actual YANG model
  - Based on draft-ietf-netconf-tcp-client-server
  - Possibly only YANG groupings (like draft-ietf-netconf-tcp-client-server)
    - Definitions could be used in different context (system, interface, protocol, ...)
    - TCP configuration not always clearly separated from rest of TCP/IP stack
  - All parameters optional

- Questions to TCPM
  1. Is the new scope of the document realistic?
  2. If so, what TCP parameters should be included in a model?