TCPM – NG TCP Yang Model

draft-ng-tcpm-yang-tcp-00

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Motivation for NG TCP Yang Model

History & Motivation for NG TCP Yang Model :
- OPSEC review of draft-ietf-tcpm-yang-tcp resulted in investigation of developing a NG TCP Yang model.
- As a result we discussed a possible NG TCP Yang Model
- What do we want added to the NG TCP Yang Model ?
- Yang is about visibility similar to SNMP MIB and not remote management.
- We would like to be able to observe the TCP parameters that make sense to be able to observe the TCP session state for telemetry back to controller.
- We would like to be able to see everything I could see with a local OS hook into the kernel which is all the TCP parameters including the connection state.

Motivation for NG TCP Yang Model

NG TCP use case of "BGP" and why that is important
- BGP has expanded its scope with MSDC (Massively Scalable Data Centers) with BGP Only DC RFC 7938.
- NG MSDC are as well extending the NVO overlay fabric to compute nodes terminating the BGP sessions on the compute nodes.
- BGP has significantly expanded its scope in the DC and other operator environments that require ultra high availability.

Use case #1 – BGP TCP/179 – TCP session monitoring with NG TCP Yang Model
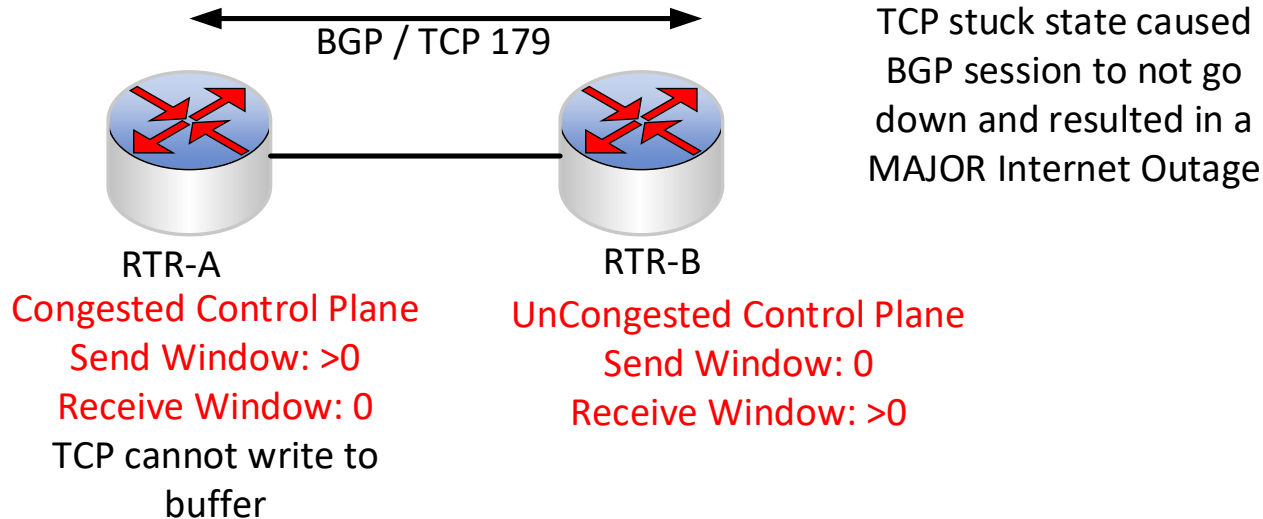## **related to Internet outages related to TCP 0 window stuck state**

2010 IDR Mail Archive "Interaction of TCP Window Size and BGP Keepalive behavior"

https://mailarchive.ietf.org/arch/msg/idr/q0Sx5d3zZjfOmOQ4lO2OZAHh9Lc/

2020 IDR Mail Archive - TCP & BGP: Some don't send terminate BGP when holdtimer expired, because TCP recv window is 0

https://mailarchive.ietf.org/arch/msg/idr/L9nWFBpW0Tci0c9DGfMoqC1j_sA/

BGP TCP Session → To be monitored with NG Yang Model

BGP / TCP 179

TCP stuck state caused BGP session to not go down and resulted in a MAJOR Internet Outage

RTR-A

Congested Control Plane
Send Window: >0
Receive Window: 0
TCP cannot write to buffer

RTR-B

UnCongested Control Plane
Send Window: 0
Receive Window: >0

Use case #2 – Compute Nodes TCP session monitoring with NG TCP Yang Model

Server FarmTCP Session → To be monitored
with NG Yang Model

SPDC / MSDC
Compute nodes

SPDC / MSDC
Compute nodes
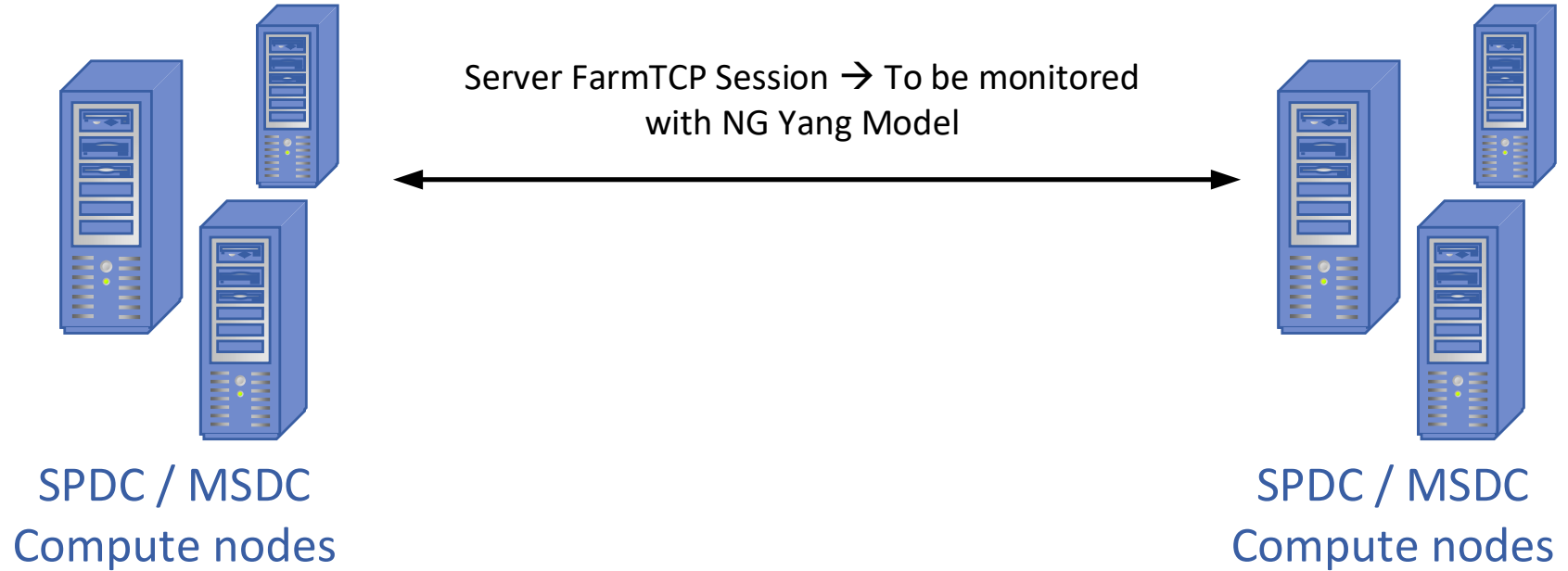
What to add to NG TCP Yang Model??

- All TCP states part of the FSM state machine.
- All TCP flags and respective states.
- All TCP parameters that would be accessible with a local OS kernel hook.
- All windowing parameters including window scaling as well as any windowing related optimizations.
- All TCP options and optimizations set such as Selective ACK.
- All TCP slow start congestion control parameters CWIN etc.

Thank You!