IP Performance Metrics MIB

draft-stephan-ippm-mib-00.txt

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diffusion libre

Outline

➡ Goals

➡ MIB Presentation

➡ MIB Description
  ➢ Generic RFC2330 TypeP
  ➢ Absolute TimeFilter
  ➢ Metrics selection
  ➢ Abstract Sampling distribution

➡ Case study

➡ Conclusion

Goal

A management interface for performance measurement on wild wide networks:

➡ Troubleshooting

  ➢ Fast measure configuration;

➡ Unambiguously results

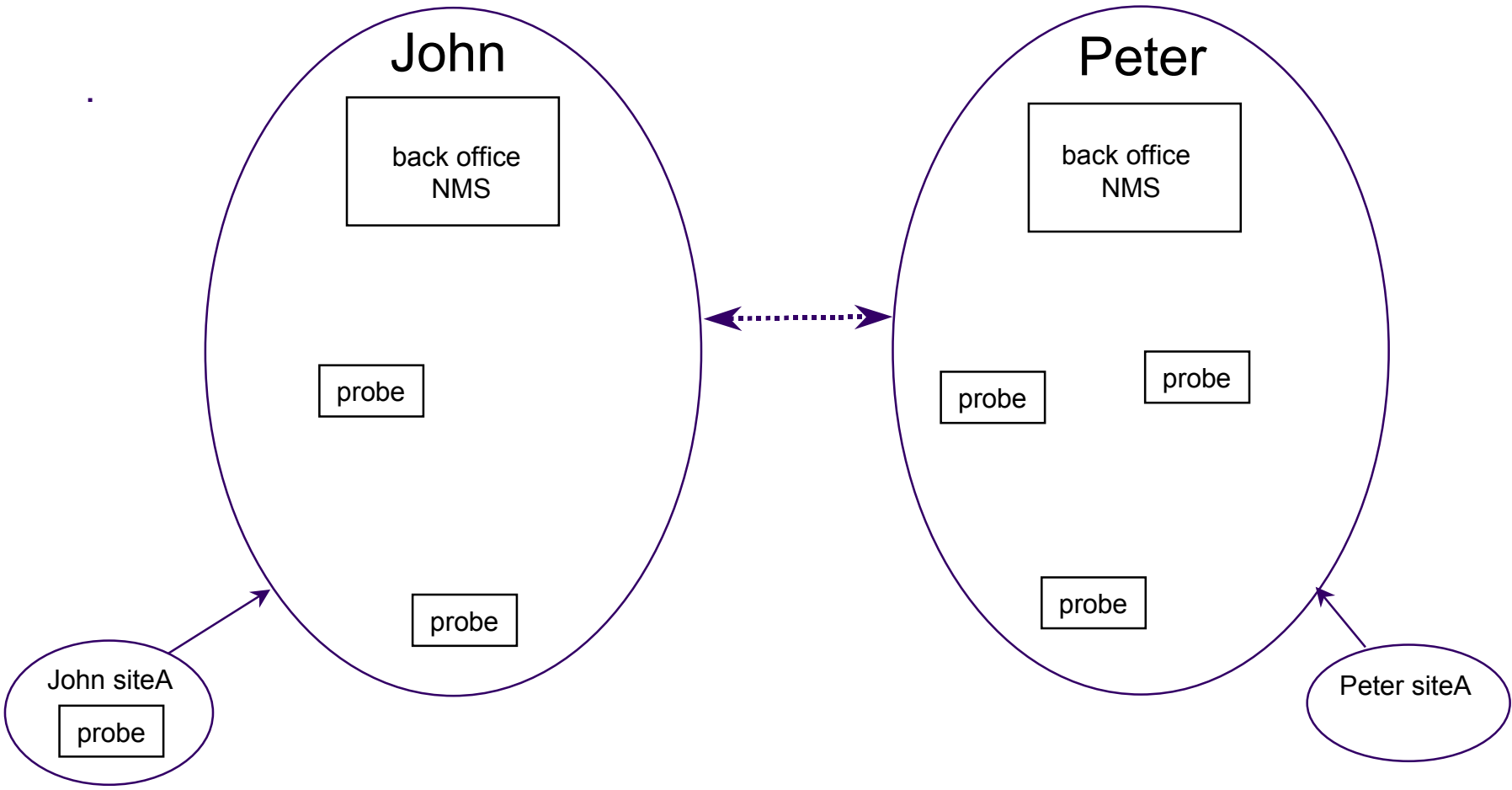 ➢ Absolute timestamping and identifiers;
  ➢ Accuracy monitoring;

➡ Multi owner

  ➢ Hierarchical management;
  ➢ Peering management capabilities;

➡ Extensible.

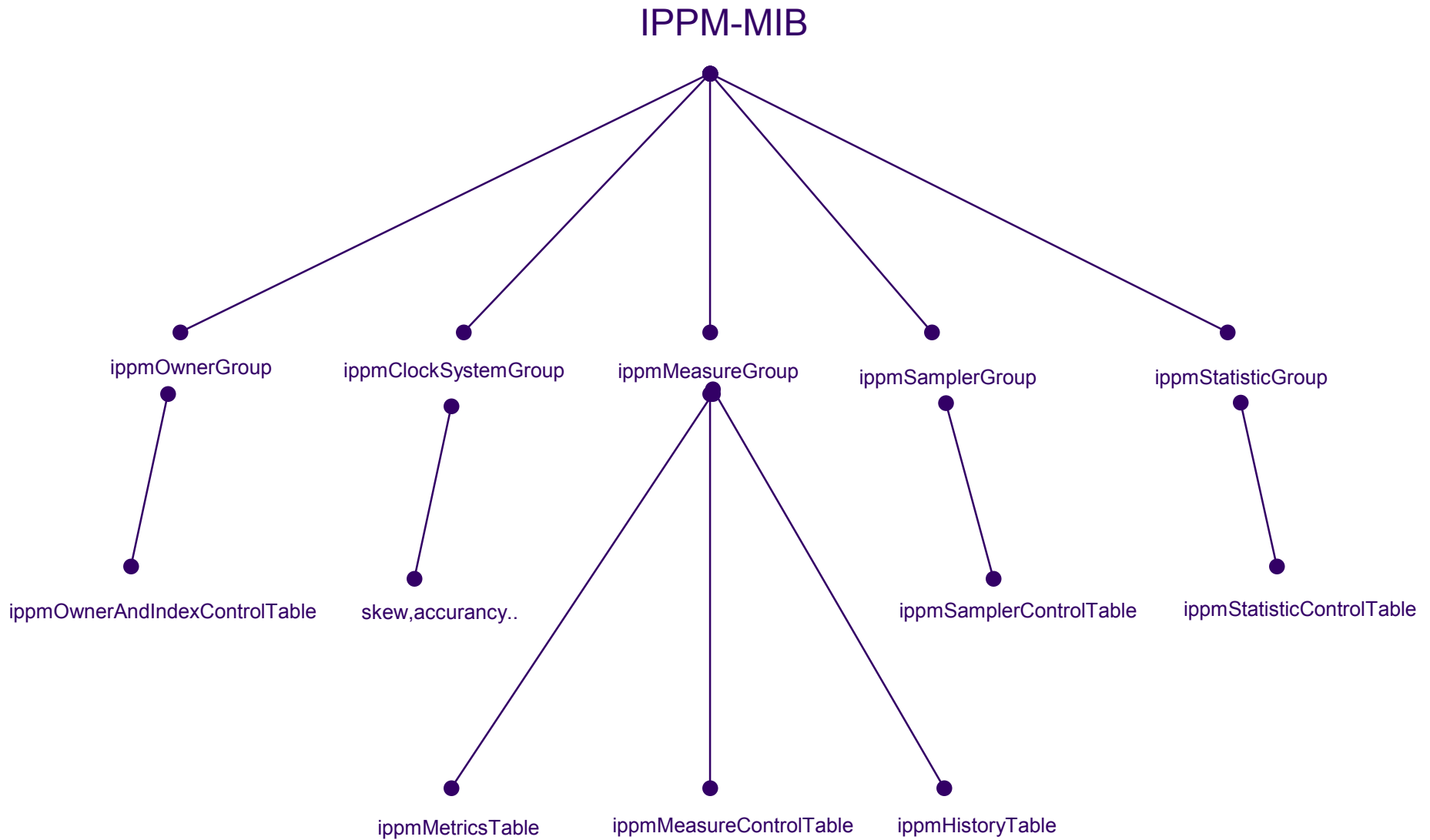# Peering management

MIB Tree

MIB Object Model

ippmOwnerAndIndexControlTable   ippmClockSystemGroup   ippmMetricsTable   ippmMeasureControlTable   ippmHistoryTable

ippmSamplerControlTable   ippmStatisticControlTable   ippm...ControlTable
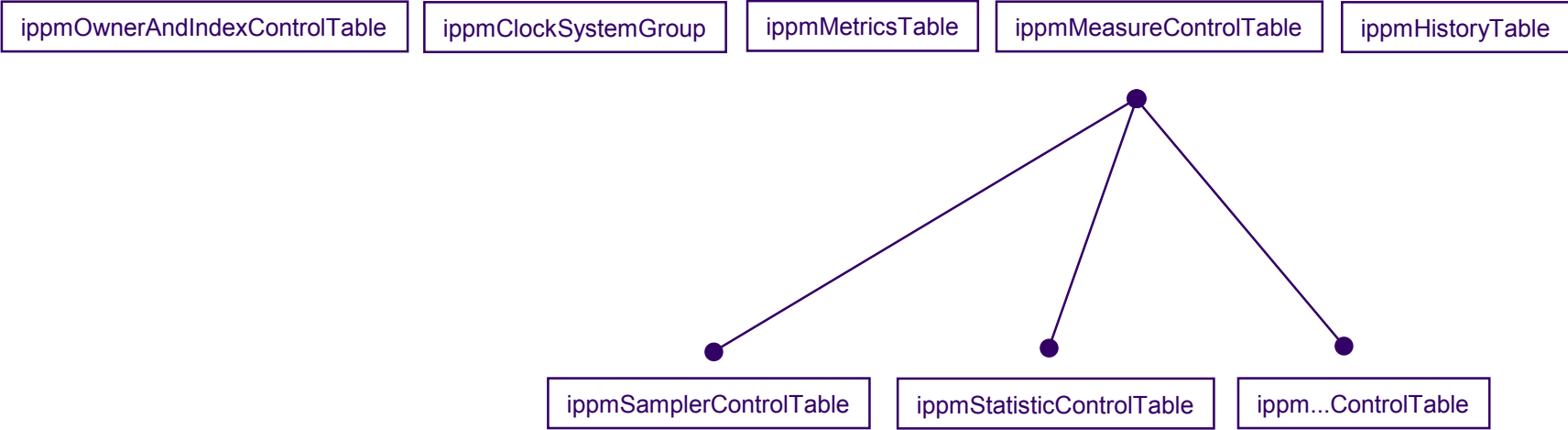
Generic RFC2330 TypeP Address

➡ Motivation

➡ The TypeP is the type of the packet of an end point.
  ➢ a subset of the packet protocols... and parameters !

➡ RMON WG protocol identifier
  ➢ macro definition (RFC2895),
  ➢ protocol identifiers (RFC2896)
    ● ip.tcp.telnet:12.0.0.8.0.0.0.0.6.0.0.0.23.3.0.0.0

➡ IPPM TypeP and TypeP parameter
  ➢ example: 'Src' of a tunnel 192.168.1.1 in 128.2.6.7:
    ● ippmSamplerSrcTypeP: ip.ipip4: 8.0.0.8.0.0.0.0.0.4.2.0.0
    ● ippmSamplerSrc: 10.4.192.168.1.1.4.128.2.6.7

.

Absolute TimeFilter : GMTDateAndTime

➡ Motivation

➡ Discussion on the RMON WG TimeFilter
   ➤ SysUpTime

➡ Format 8 bytes

```
field  octets  contents            range

-----  ------  --------            -----
1      1       year*               0..256
2      2       month               1..12
3      3       day                 1..31
4      4       hour                0..23
5      5       minutes             0..59
6      6       seconds             0..59
7      7-8     1/10 milliseconds   0..9999
```
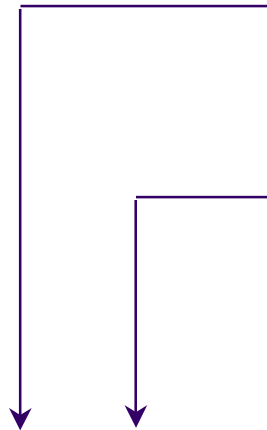
ippmMeasureControlMetrics selection

➡ Motivation

- ➢ bandwidth
- ➢ scalabity

ippmMetricsTable

	#	Metric
	21	…
	20	Round-trip-Delay-Inverse-Percentile
	19	Round-trip-Delay-Minimum
	18	Round-trip-Delay-Median
	17	Round-trip-Delay-Percentile
	16	Round-trip-Delay-Poisson-Stream
	15	Round-trip-Delay
	14	One-way-Packet-Loss-Average
	13	One-way-Packet-Loss-Poisson-Stream
✔	12	One-way-Packet-Loss
	11	One-way-Delay-Inverse-Percentile
	10	One-way-Delay-Minimum
	9	One-way-Delay-Median
	8	One-way-Delay-Percentile
	7	One-way-Delay-Poisson-Stream
✔	6	One-way-Delay
	5	Interval-Temporal-Connectivity
	4	Interval-Bidirectional-Connectivity
	3	Interval-Unidirectional-Connectivity
	2	Instantaneous-Bidirectional-Connectivity
	1	Instantaneous-Unidirectional-Connectivity

ippmMeasureControlMetric**s**   '00000000 00000000 00001000 00100000'B

Abstract Sampling distribution

➡ ippmMeasureControlClockPeriod ticks & ippmSamplerControlClockPattern

➡ example: Continous Burst
  ➢ ippmSamplerControlClockPattern 00000111110000011111
  ➢ '00000111110000011111'B -> '07C1F'H

clock ticks

clock pattern | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |

action instants
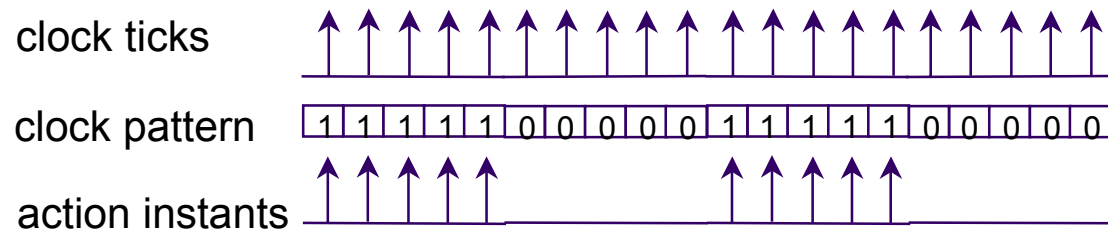
Case study

ippmOwnerTable

#	Owner
1	Acme
…	
n	Peter
…	…
m	John

ippmMetricsTable

	#	Metric
	20	Round-trip-Delay-Inverse-Percentile
		…
✔	12	One-way-Packet-Loss
		…
✔	6	One-way-Delay
	1	Instantaneous-Unidirectional-Connectivity

ippmHistoryTable

owner	ownerIndex	metric	timeMark	value (ms)
John	72	6	0108060900000000	5
John	72	12	0108060900000000	0
John	72	6	0108060901000000	4
John	72	12	0108060901000000	0
John	72	6	0108060902000000	4
John	72	12	0108060902000000	0
John	72	6	0108060903000000	10
John	72	12	0108060903000000	0
John	72	6	0108060904000000	7
John	72	12	0108060904000000	0
Peter	79	9	0108060905000000	6
John	72	6	0108060905000000	5
John	72	12	0108060905000000	0
John	72	6	0108060906000000	4
John	72	12	0108060906000000	0
John	72	6	0108060907000000	16
John	72	12	0108060907000000	0
John	72	6	0108060908000000	10
John	72	12	0108060908000000	0
John	72	6	0108060909000000	0
John	72	12	0108060909000000	1
Peter	79	9	0108060910000000	7

ippmMeasureControlTable

owner	#	name	metrics	begin	period	status	…
John	72	Lost&owd	2080	0108060900000000	1 mn	active	
Peter	73	Lost	12	0108060900000000	1 h	active	
John	73	Lost&delay	2080	0108060900000000	15 mn	notReady	
Peter	79	owd-Median	9	0108060905000000	5 mn	active	

ippmSamplerControlTable

Src	Dst	ClockPattern	delay	packetSize	dataPattern
…	…	1	3s	64	15 mn
…	…	1	3s	100	1 h
…	…	1	3s	512	1 h

ippmStatisticControlTable

HistoryOwner	HistoryOwnerIndex	HistoryMetric
John	72	6

Conclusion

➡ Focus on the management of the measures of the network performance :

➢ basic peering management mechanism;

➢ from end to end;

➢ unambiguous measures and results.

➡ RMON framework.

➡ Extensible.

➡ Further plans:

➢ Relationship with the RMON MIBs.

➢ Peering management capabilities: Grant, StorageType...

➢ Spec validation: sequence number,...

➢ Reissue the draft.

➢ To become an IPPM WG draft.