



Extending the IPFIX protocol for better
QoS monitoring

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Scampi/Lobster Software

- MAPI - Measurement API – in C
 - ◆ Interfaces passive measurement cards(DAG, Combo6)
 - ◆ Abstraction, sharing, branching, anonymization, efficiency(0-copy)
 - ◆ Functions – filtering hw/sw, counters, flow analysis
- Applications
 - ◆ Service detection - appmon
 - ◆ Polymorphic attack detector
 - ◆ Extended flow analysis – Stager
 - ★ SubSecond Bandwidth measurement(SSB)

Extended flow parms.

- Compute cheap numbers : count, sum, sum of squares => standard deviation
- Packet size distribution
- Interarrival time distribution
- Bit rate vs time – 1, 10, 100, 1000 ms (max/min)
- TCP properties : windows, retransmissions/out-of-seq, direction - initiator
- Service classification
- RTP time-stamps/payload-type

Destination AS report (2)

Stager - Firefox

File Edit View Go Bookmarks Tools Help

Setup Destination AS table Connections 10 Show Add

All interfaces ??? In none 1

Destination AS

Monday 18. September 2006, 15:00
??? (in, 1/1)

Pie chart Plot graph

Select	Dst AS		Traffic		Requests		Responses	
	Number	Name	Octets	Flows	Percent	Per second	Percent	Per second
<input type="checkbox"/>	0	0	15.4G	480·10 ³	26.98%	36	8.80%	11.7
<input type="checkbox"/>	15659	NEXTGENTEL NEXTGENTEL Autonomous System	15.1G	119·10 ³	13.88%	4.6	34.76%	11.5
<input type="checkbox"/>	8642	B2 B2 Bredband AB (publ)	11.2G	73.4·10 ³	12.12%	2.47	9.51%	1.94
<input type="checkbox"/>	2119	TELENOR-NEXTEL Telenor Internet Access	8.43G	135·10 ³	15.05%	5.65	26.88%	10.1
<input type="checkbox"/>	3301	TELIANET-SWEDEN TeliaNet Sweden	8.05G	130·10 ³	30.64%	11.1	7.80%	2.81
<input type="checkbox"/>	3320	DTAG Deutsche Telekom AG	5.91G	158·10 ³	4.31%	1.89	5.61%	2.46
<input type="checkbox"/>	6830	UPC UPC Broadband	4.64G	92.7·10 ³	6.77%	1.74	7.31%	1.88
<input type="checkbox"/>	7132	SBC Internet Services	4.24G	110·10 ³	6.82%	2.08	6.05%	1.85
<input type="checkbox"/>	8394	ALFANETT Alfannett Autonomous System	3.61G	28.8·10 ³	7.67%	0.613	33.54%	2.68
<input type="checkbox"/>	3215	AS3215 France Telecom Transpac	3.55G	93.6·10 ³	4.80%	1.25	10.18%	2.64

Stager, 2004-2006 © UNINETT AS Processing the report took 79.79ms



Most out of sequence dst-AS

- out 10ms 100ms eff win
- % Kbps Kbps Byte
- 0.9 8449 3482 7105
- 1.4 4584 502 5210
- 1.5 5903 1007 8814
-
- 11.9 1917 204 3081
- 13.6 1054 112 1650
- 15.1 1445 156 2467
- 21.4 1973 208 3120
-

summary

- We have demonstrated
 - ◆ MAPI - passive probe IPFIX generator
 - ◆ Stager - IPFIX flow reporting system
 - ◆ Enterprise IPFIX variables for performance
- Do you want to
 - ◆ standardize performance parameters?