



# Making a Day in the Life of a University Sys-Admin Easier

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## **About AusCERT**

- AusCERT is an operational cyber emergency response team based at the University of Queensland
- Helping organisations prevent, detect, respond to and mitigate cyber and Internet based attacks since 1993
- Independent and impartial
- Self-funded and not-for-profit
- National focus across government, education, research and industry





# ISAC: Information Sharing & Analytics Centre

Share today, Save tomorrow

© Nick Soysa, AusCERT Senior Information Security Analyst























## What we're all doing (hopefully):

- Your own security framework, for your environment
- Participate in your cybersecurity community of practice (eg QUDIT)
- QUDIT 10 ten initiatives
- ...because you can't go it alone!





## Why an ISAC?

- Most organisations engage in threat intelligence sharing in an informal and unstructured manner
- Sharing channels: mail notifications, chat, phone, social media
- Sharing delay
- Persistent record of information (! Chat)
- Difficulty interpreting and actioning threat indicators





#### **ISAC Functions**

- Information Sharing and Analytics Centre
- Curation of data
- Support industry standard data formats (e.g. STIX, ...)





## Sharing modes

#### Human consumption

- Context important; bit more effort populating events
- Ability to visualise relationships
- Ability to interpret indicators, detect and report false positives

#### Machine consumption

- Context not important
- Export in widely supported automation standards important
- Careful curation absolutely important (~0 false positives)
- Testing important





#### Introduction to MISP

- Free and Open Source threat intel sharing platform
- Developed and maintained by CERT Luxembourg
- Used by world recognised agencies: NSA, ....
- Ongoing integration with multiple security vendors and tools SIEMs,
   IDS, Mail filters, etc





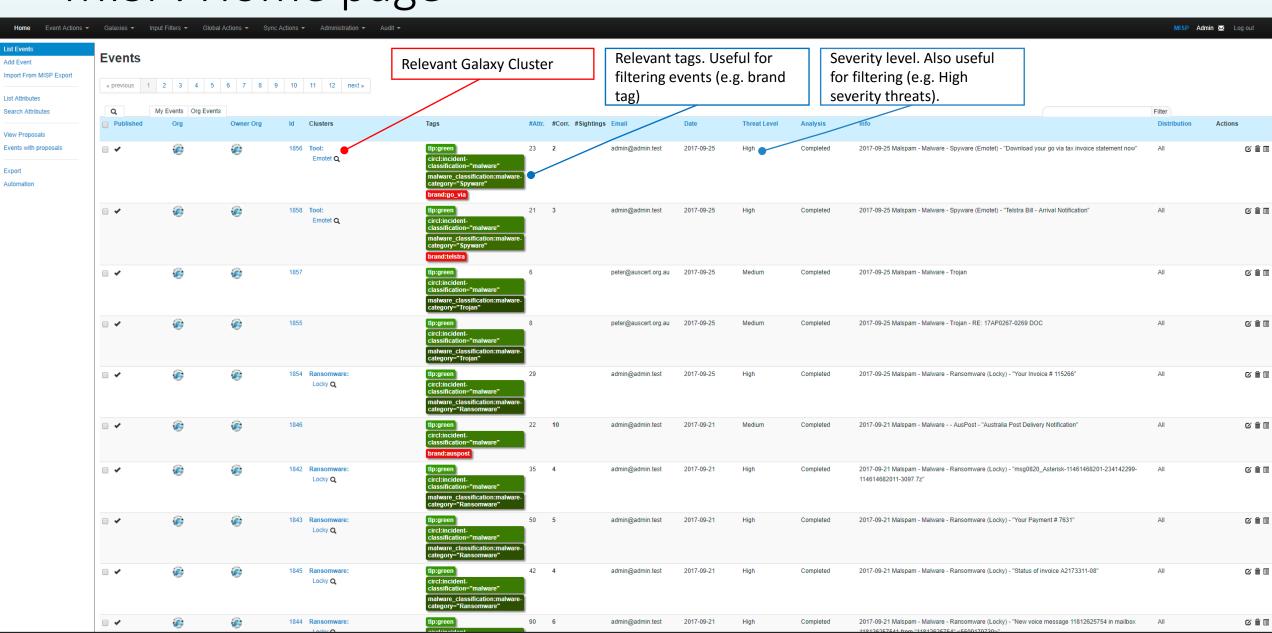
## MISP: Welcome Page





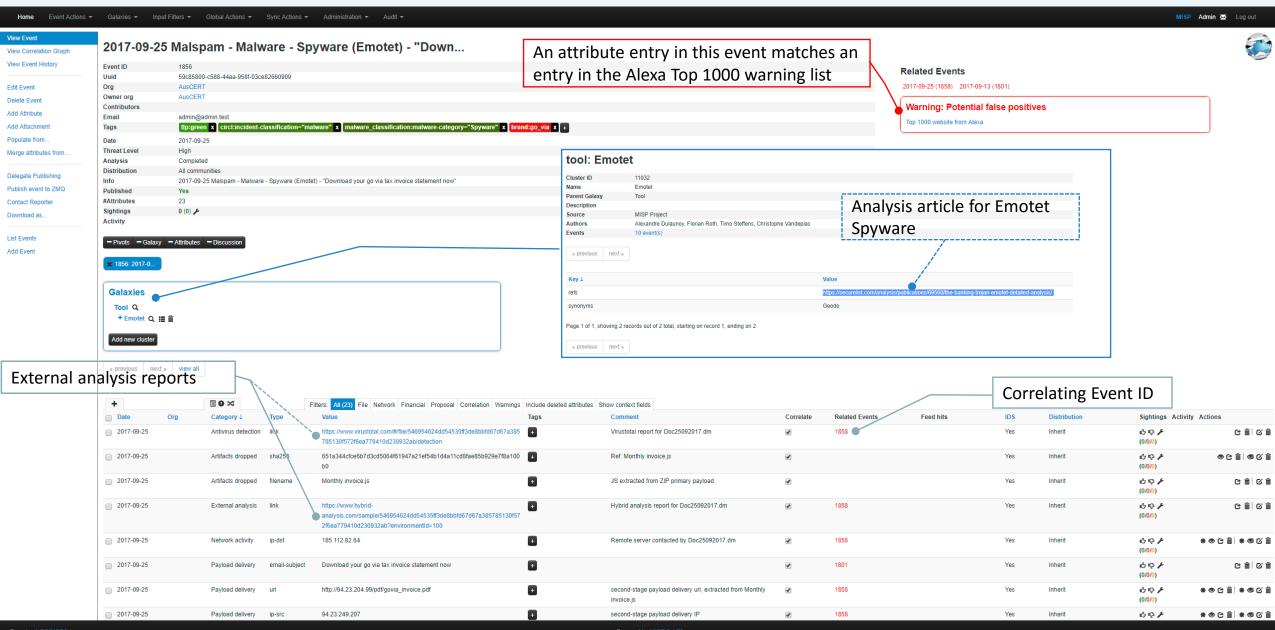


### MISP: Home page



wnload: PGP/GPG key

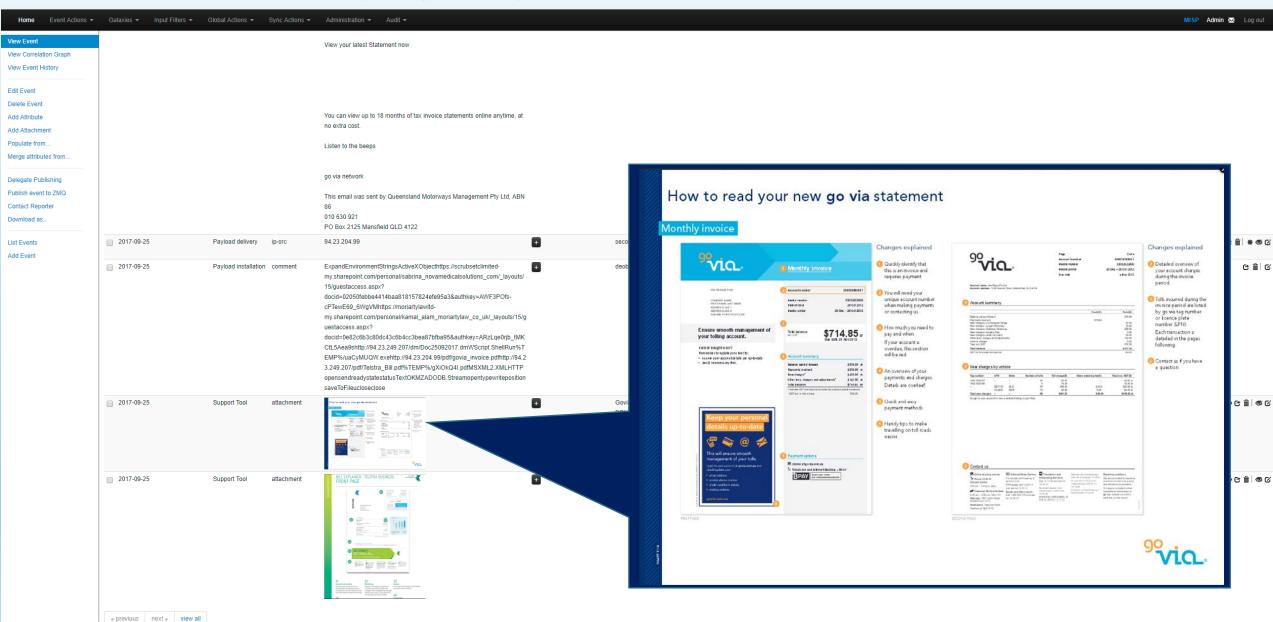
## MISP: Event page – part 1



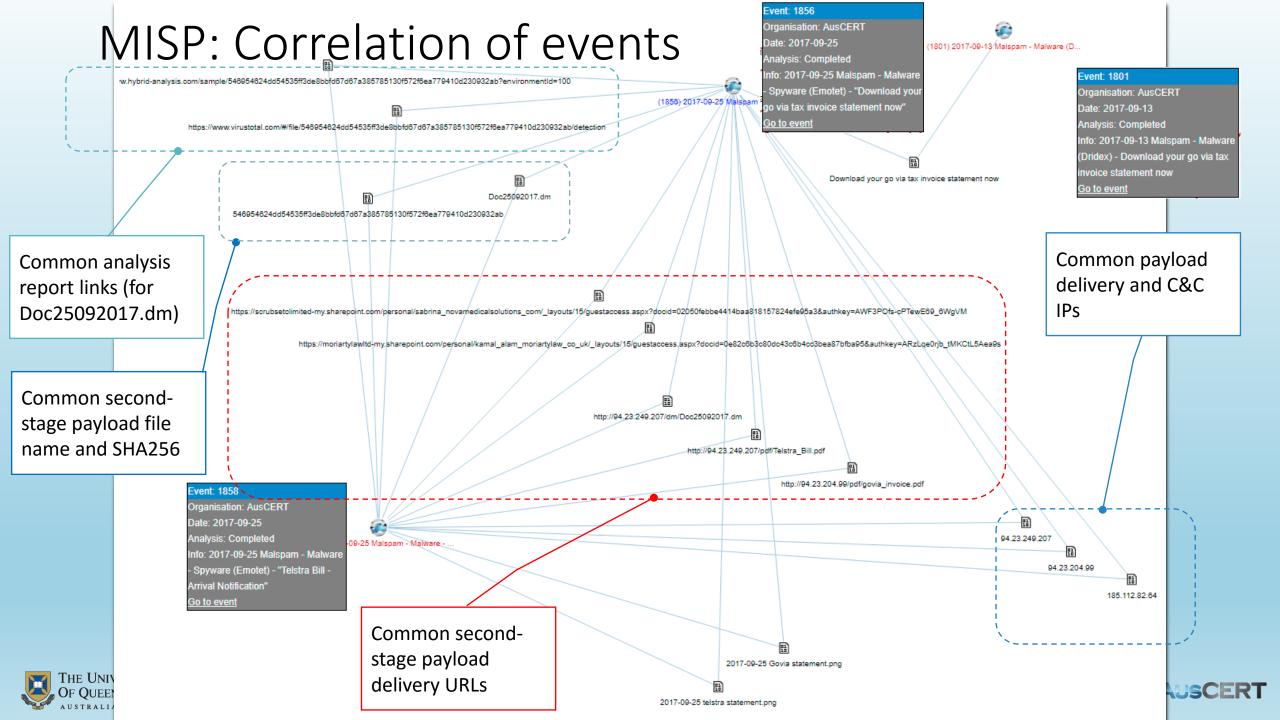
## MISP: Event page – part 2

<b>Home</b> Event Actions ▼	Galaxies ▼ Input Filters ▼	Global Actions ▼	Sync Actions ▼	Administration ▼ Audit ▼								iP Admin ⊠ Log out
View Event											(0/0/0)	
	2017-09-25	Payload delivery	sha256	546954624dd54535ff3de8bbfd67d67a385785130f572f6ea779410d230932 ab	<b>=</b>	Ref: Doc25092017.dm	•	1858	Yes	Inherit	ı∂ ı⊋ ≯ (0/ <mark>0/</mark> 0)	<b>◎ ୯ ଲି   ◎ ୯ ଲି</b>
Edit Event	2017-09-25	Payload delivery	filename	Doc25092017.dm	<b>+</b>	second-stage payload	€	1858	Yes	Inherit	(0/ <mark>0/0</mark> )	ල <b>ක</b> ් ල ක
Delete Event	2017-09-25	Payload delivery	url	http://94.23.249.207/pdf/Telstra_Bill.pdf	•	second-stage payload delivery url, extracted from Monthly invoice.js	€	1858	Yes	Inherit	(0/ <mark>0/0</mark> )	* * * * * * * * * *
Add Attachment	2017-09-25	Payload delivery	url	http://94.23.249.207/dm/Doc25092017.dm	<b>=</b>	second-stage payload delivery url, extracted from Monthly invoice.js	•	1858	Yes	Inherit	心 吟 <b>》</b> (0/ <mark>0/</mark> 0)	* * * * * * * * * * * * * * * * * * * *
Populate from Merge attributes from	2017-09-25	Payload delivery	email-body		•		•		No	Inherit	ı∂ <b>ı</b> ⊋ ≯ (0/ <mark>0</mark> /0)	ල <b>ක</b> ් ල ක්
1 <del></del>				Your go via tax invoice statement is now available for download								
Delegate Publishing Publish event to ZMQ Contact Reporter				If you have a post-paid account, ensure your monthly invoice is paid by the due date to avoid unnecessary fees.	_	Sharepoint URI	RLs trig	gering potential false positive alert		e alert		
Download as				To view previous tax invoice statements, login to your account using your account number and PIN at govia.com.au	/							
List Events Add Event				You can view up to 18 months of tax invoice statements online anytime, at no extra cost.	/			Contextual comment				
				This email was sent by Queensland Motorways Management Pty Ltd, ABN 86 010 630 921 PO Box 2125 Mansfield QLD 4122				of a similar type (e.g.	. URLs)	for human	interpre:	tation.
	2017-09-25	Payload delivery	url	https://moriartylawitd- my.sharepoint.com/personal/kamal_alam_moriartylaw_co_uk/_layouts/15/g uestaccess.aspx? docid=0e82c6b3c80dc43c6b4cc3bea87bfba95&authkey=ARzLqe0rjb_tMK		second-stage payload delivery url, extracted from Monthly invoice is		1858	Yes	Inherit	₾ ♥ <b>۶</b> (0/0/0)	*****
	2017-09-25	Payload delivery	url	CitL5Aea9s A  https://scrubsetclimited- my.sharepoint.com/personal/sabrina_novamedicalsolutions_com/_layouts/ 15/guestacces.aspx? docid=02050febbe4414baa818157824efe95a3&authkey=AWF3POfs- cPTewE69_5WgVM A	0	second-stage payload delivery url, extracted from Monthly invoice is	€	1858	Yes	Inherit	© ♥ F (0/0/0)	***************************************
	2017-09-25	Payload delivery	url	https://holmefarmproduce-my.sharepoint.com/personal/sharon_holmefarmproduce_co_uk/_layouts/15 /guestaccess.aspx? docid=0d97d8d992fa247dca674890a8c0042c3&authkey=ATe3zGWUcWM t-p4q8F8xBlk		primary payload delivery URL in email body	•		Yes	Inherit	© ♥ <b>/</b> (0/0/0)	* * * * * * * * * * *
	2017-09-25	Payload delivery	sha256	eb3c08da8b978d7bb12961dd67c36aff80d04dc8bb3347be9a47451558962 630	<b>=</b>	primary payload, Monthly invoice zip	€		Yes	Inherit	ı∂ <b>ı</b> ⊋ <i>⊁</i> (0/ <mark>0/</mark> 0)	<b>⊚</b> ெ© ்
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	2017-09-25	Payload delivery	email-body	Govia	•		•		No	Inherit	16 17 F	<b>で前</b>   で前
				Dear Client							(0/0/0)	
				Your go via tax invoice statement is now available for download								
				If you have a post-paid account, ensure your monthly invoice is paid by the due date to avoid unnecessary fees.								
				To view previous tax invoice statements, login to your account using								
Download: PGP/GPG key						Powered by MISP 2.4.79						

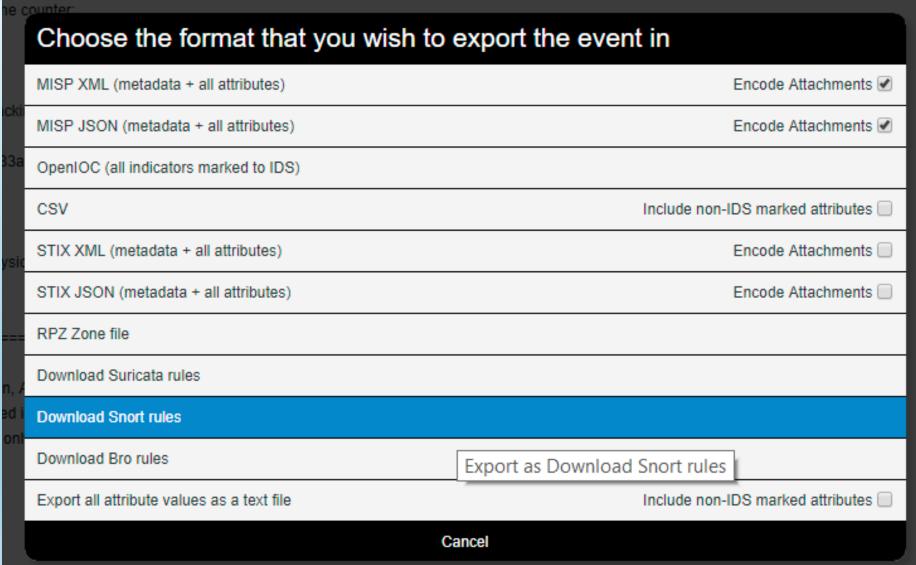
## MISP: Event page – part 3



wnload: PGP/GPG key
Powered by MISP 2.4.



### MISP: Downloading Indicators manually







#### Manually downloaded indicators: Snort rules for event 1856

```
alert tcp $HOME NET any -> $EXTERNAL NET $HTTP PORTS (msg: "MISP
e1856 [] Outgoing HTTP URL: http/
3a|//94.23.249.207/pdf/Telstra Bill.pdf";
flow:to server, established; content: "http/
3a|//94.23.249.207/pdf/Telstra Bill.pdf"; nocase; http uri;
tag:session,600,seconds; classtype:trojan-activity; sid:5669871;
rev:1; priority:1;
reference:url, https://misp.auscert.org.au/events/view/1856;)
alert ip $HOME NET any -> 185.112.82.64 any (msg: "MISP e1856 []
Outgoing To IP: 185.112.82.64";
                                 classtype:trojan-activity;
sid:5669921; rev:1; priority:1;
reference:url, https://misp.auscert.org.au/events/view/1856;)
alert ip 94.23.249.207 any -> $HOME NET any (msg: "MISP e1856 []
Incoming From IP: 94.23.249.207"; classtype:trojan-activity;
sid:5670231; rev:1; priority:1;
reference:url, https://misp.auscert.org.au/events/view/1856;)
alert ip 94.23.204.99 any -> $HOME NET any (msq: "MISP e1856 []
Incoming From IP: 94.23.204.99"; classtype:trojan-activity;
sid:5670241; rev:1; priority:1;
reference:url, https://misp.auscert.org.au/events/view/1856;)
```

```
alert tcp $EXTERNAL NET any -> $SMTP SERVERS 25 (msg: "MISP e1856
[] Bad Email Subject"; flow:established, to server;
content: "Subject | 3a | "; nocase; content: "Download your go via tax
invoice statement now"; fast pattern; nocase; content:"|OD OA OD
OA|"; within:8192; tag:session,600,seconds; classtype:trojan-
activity; sid:5669741; rev:1; priority:1;
reference:url, https://misp.auscert.org.au/events/view/1856;)
alert tcp $HOME NET any -> $EXTERNAL NET $HTTP PORTS (msg: "MISP
e1856 [] Outgoing HTTP URL: https/3a//holmefarmproduce-
my.sharepoint.com/personal/sharon holmefarmproduce co uk/
layouts/15/questaccess.aspx?docid=
0d97d8d992fa247dca674890a8c0042c3&authkey=ATe3zGWUcWMt-
p4q8F8xBIk"; flow:to server, established; content: "https/
3a|//holmefarmproduce-
my.sharepoint.com/personal/sharon holmefarmproduce co uk/
layouts/15/questaccess.aspx?docid=
0d97d8d992fa247dca674890a8c0042c3&authkey=ATe3zGWUcWMt-
p4q8F8xBIk"; nocase; http uri; tag:session,600,seconds;
classtype:trojan-activity; sid:5669811; rev:1; priority:1;
reference:url, https://misp.auscert.org.au/events/view/1856;)
alert tcp $HOME NET any -> $EXTERNAL NET $HTTP PORTS (msg: "MISP
e1856 [] Outgoing HTTP URL: https/3a//scrubsetclimited-
my.sharepoint.com/personal/sabrina novamedicalsolutions com/
layouts/15/questaccess.aspx?docid=
02050febbe4414baa818157824efe95a3&authkey=AWF3P0fs-cPTewE69
6WqVM"; flow:to server, established; content: "https/
3a|//scrubsetclimited-
my.sharepoint.com/personal/sabrina novamedicalsolutions com/
layouts/15/guestaccess.aspx?docid=
02050febbe4414baa818157824efe95a3&authkey=AWF3P0fs-cPTewE69
6WgVM"; nocase; http uri; tag:session,600,seconds;
classtype:trojan-activity; sid:5669831; rev:1; priority:1;
reference:url, https://misp.auscert.org.au/events/view/1856;)
```





#### Manually downloaded indicators: RPZ for event 1856

```
STTL 1w;

SOA localhost. root.localhost (2017092500 2h 30m 30d 1h)

NS localhost.

The following list of IP addresses will timeout.

32.64.82.112.185.rpz-ip CNAME rpz-drop.

32.207.249.23.94.rpz-ip CNAME rpz-drop.

32.99.204.23.94.rpz-ip CNAME rpz-drop.
```





#### Manually downloaded indicators: STIX JSON for event 1856

("timestamp": "2017-09-25T12:07:56+00:00", "version": "1.1.1", "incidents": [{"status": {"xsi:type": "stixVocabs:Incidents": [["status": {"xsi:type": "stixVocabs:Incidents": [["status": ["timestamp": "2017-09-25T12:07:56+00:00", "version": "1.1.1", "incidents": [["status": ["status": [ \*https://www.hybrid-analysis.com/sample/546954624dd54535ff3de8bbfd67d67a385785130f572f6ea779410d230932ab}environmentId=100"], "identity": {"name": "AusCERT"j}, "handling": [{"controlled\_structure": "../../descendant-or-self::node()", "marking\_structures": [{"color": "GREEN", "xsi:type": "tlpMarking:TLPMarkingStructureType"}]]], "related\_observables": {"observables": {"observables": {"observable": {"observable-59c85cb9-ff08-4fc2-b824-606e82669999", "properties": 4"file\_name": "2017-09-25 Govia statement.png", "xsi:type": "FileObjectType"}}, "id": "AusCERT:observable-59c85cb9-ff08-4fc2-b824-606e82669999", "properties": 4"file\_name": "2017-09-25 Govia statement.png", "xsi:type": "FileObjectType"}}, "id": "AusCERT:observable-59c85cb9-ff08-4fc2-b824-606e82669999", "properties": 4"file\_name": "2017-09-25 Govia statement.png", "xsi:type": "FileObjectType"}}, "id": "AusCERT:observable-59c85cb9-ff08-4fc2-b824-606e82669999", "properties": 4"file\_name": "2017-09-25 Govia statement.png", "xsi:type": "FileObjectType"}, "id": "AusCERT:observable-59c85cb9-ff08-4fc2-b824-606e82669999", "properties": 4"file\_name": "2017-09-25 Govia statement.png", "xsi:type": "FileObjectType"}, "id": "AusCERT:observable-59c85cb9-ff08-4fc2-b824-606e82669999", "properties": 4"file\_name": "2017-09-25 Govia statement.png", "xsi:type": "FileObjectType"}, "id": "AusCERT:observable-59c85cb9-ff08-4fc2-b824-606e82669999", "properties": 4"file\_name": "2017-09-25 Govia statement.png", "xsi:type": "FileObjectType"}, "id": "AusCERT:observable-59c85cb9-ff08-4fc2-b824-606e82669999", "properties": 4"file\_name": "2017-09-25 Govia statement.png", "xsi:type": "FileObjectType"}, "id": "AusCERT:observable-59c85cb9-ff08-4fc2-b824-606e82669999", "properties": 4"file\_name": "2017-09-25 Govia statement.png", "xsi:type": 4"file\_name": 4"file\_na b824-606682660909", "description": "Govia statement fectched along with second-stage payload DRM Encoded audio file (Doc25092017.dm)."}, "relationship": "Support Tool"}, {"observable": {"id": "AusCERT:FileObject-59c85cef-67f4-4e47-bcd5-03ce82660909", "properties": {"file\_name": "2017-09-25 telstra statement.png", "xsi:type": "FileObjectType"}}, "id": "AusCERT:observable-59c85cef-67f4-4e47-bcd5-03ce82660909", "description": "Telstra bill \"Interpretation\" document downloaded along with Second-stage payload"}, "relationship": "Support Tool"}|}, "id": "AusCERT:observable-59c85cef-67f4-4e47-bcd5-03ce82660909", "description": "Telstra bill \"Interpretation\" document downloaded along with Second-stage payload"}, "relationship": "Support Tool"}|}, "id": "AusCERT:observable-59c85cef-67f4-4e47-bcd5-03ce82660909", "description": "Telstra bill \"Interpretation\" document downloaded along with Second-stage payload"}, "relationship": "Support Tool"}|}, "id": "AusCERT:observable-59c85cef-67f4-4e47-bcd5-03ce82660909", "description": "Telstra bill \"Interpretation\" downloaded along with Second-stage payload"}, "relationship": "Support Tool"}|}, "id": "AusCERT:observable-59c85cef-67f4-4e47-bcd5-03ce82660909", "description": "Telstra bill \"Interpretation\" downloaded along with Second-stage payload"}, "relationship": "Support Tool"}|}, "id": "AusCERT:observable-59c85cef-67f4-4e47-bcd5-03ce82660909", "description": "Telstra bill \"Interpretation\" downloaded along with Second-stage payload"}, "relationship": "Support Tool"}|}, "id": "AusCERT:observable-59c85cef-67f4-4e47-bcd5-03ce82660909", "description": "Telstra bill \"Interpretation\" downloaded along with Second-stage payload", "relationship": "Support Tool"}|}, "relationship": "Support Tool"}|}, "relationship": "Support Tool"|}, " \"Download your go via tax invoice statement now\"", "timestamp": "2017-09-25712:08:03+00:00", "related indicators": {"indicators": {"indicators": {"id": "AuscERT:EmailMessage-59c8581c-b350-4aa5-8d7d-606e82660909", "properties": {"header": {"subject": {"condition": "Equals", "value": "Download your go via tax invoice statement now"}}, "xsi:type": "EmailMessageObjectType"}}, "id": "AusCERT:observable-59c8581c-b350-4aa5-8d7d-606e82660909"}, "confidence": {"timestamp": "2017-09-25T11:13:00+00:00", "description": "Derived from MISP's IDS flag. If an attribute is marked for IDS exports, the confidence will be high, otherwise none", "value": {"xsi:type": "stixVocabs:HighMediumLowVocab-1.0", "value": "High"}}, "description": "Payload delivery: Download your go via tax invoice statement now (MISP Attribute #166974)", "indicator\_types": [{"xsi:type": "stixVocabs:IndicatorTypeVocab-1.1", "value": "Malware Artifacts"}, {"xsi:type": "stixVocabs:IndicatorTypeVocab-1.1", "value": "Malicious E-mail"}], "title": "Payload delivery: Download your go via tax invoice statement now (MISP Attribute #166974)", "timestamp": "2017-09-25T11:13:00+00:00", "id": "AusCERT:indicator-59c8581c-b350-4aa5-8d7d-606e82660909", "valid\_time\_positions": [{}]}, "relationship": "Payload delivery"}, {"indicator": {"confidence": {"timestamp": "2017-09-25T11:13:26+00:00", "description": "Derived from MISP's IDS flag. If an attribute is marked for IDS exports, the confidence will be high, otherwise none", "value": {"xsi:type": "stixVocabs:HighMediumLowVocab-1.0", "value": "None"}}, "description": "Payload delivery: \u00a0Dear Client\r\n\r\nTo view previous tax invoice statements, login to your account using your account number and PIN at govia.com.au\r\n\r\nYou can view up to 18 months of tax invoice statements online anytime, at no extra cost.\r\n\r\nYou can view up to 18 months of tax invoice statements. QLD 4122 (MISP Attribute #166975)", "indicator types": [{"xsi:type": "stixVocabs:IndicatorTypeVocab-1.1", "value": "Payload delivery: \u00a0Dear Client\r\n\r\nYour go via tax invoice statement is now available for download\r\n\r\n\f\nf you have a post-paid account, ensure your monthly invoice is paid by the due date to avoid unnecessary fees.\r\n\r\nTo view previous tax invoice statements, login to your account using your account your a Motorways Management Pty Ltd, ABN 86 010 630 921\r\nPO Box 2125 Mansfield QLD 4122 (MISP Attribute #166975)", "timestamp": "2017-09-2511:13:26+00:00", "id": "AusCERT:indicator-59c85836-52a8-4abe-8cba-61a782660909", "valid\_time\_positions": [{}]}, "relationship": "Payload delivery"}, {"indicator": {"confidence": {"timestamp": "2017-09-25T11:14:05+00:00", "description": "Derived from MISP's IDS flag. If an attribute is marked for IDS exports, the confidence will be high, otherwise none", "value": "stixVocabs:HighMediumLowVocab-1.0", "value": "None"}}, "description": "Payload delivery: Govia\r\n\r\n Dear Client\r\n\r\n Your go via tax invoice statement is now available for download\r\n\r\n If you have a post-paid account unmber of the due date to avoid unnecessary fees.\r\n\r\n To view previous tax invoice statements, login to your account unmber Motorways Management Pty Ltd, ABN 86\r\n PO Box 2125 Mansfield QLD 4122 (MISP Attribute #166976)", "indicator\_types": [{"xsi:type": "stixVocabs:IndicatorTypeVocab-1.1", "value": "Malware Artifacts"}], "title": "Payload delivery: Govia\r\n\r\n Dear Client\r\n\r\n Your go via tax invoice statement is now available for download\r\n\r\n If you have a post-paid account, ensure your monthly invoice is paid by\r\n the due date to avoid unnecessary fees.\r\n\r\n To view previous tax invoice statements, login to your account using\r\n your account number and PIN at govia.com.au\r\n\r\n PO Box 2125 Mansfield QLD 4122 (MISP Attribute #166976)", "timestamp": "2017-09-25T11:14:05+00:00", "id": "AusCERT:indicator-59c8585d-ba70-4037-a112-03ce82660909", "valid\_time\_positions": [{}]]}, Queensland Motorways Management Pty Ltd, ABN 86\r\n "relationship": "Payload delivery"), {"indicator": {"confidence": {"timestamp": "2017-09-25711:14:26+00:00", "description": "Derived from MISP's IDS flag. 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#### Automatically retrieving indicators via the API

• Snort (NIDS) rule: https://misp.auscert.org.au/events/nids/snort/download/1856

alert tcp \$EXTERNAL\_NET any -> \$SMTP\_SERVERS 25 (msg: "MISP e1856 [] Bad Email Subject"; flow:established,to server; content: "Subject | 3a | "; nocase; content: "Download your go via tax invoice statement now"; fast\_pattern; nocase; content:"|OD 0A 0D 0A|"; within:8192; tag:session,600,seconds; classtype:trojan-activity; sid:5669741; rev:1; priority:1; reference:url,https://misp.auscert.org.au/events/view/1856;)

> Alert on inbound traffic to SMTP servers on standard SMTP port bearing mail subject: "Download your go via tax invoice statement now"

Snort (NIDS) rule

alert tcp \$HOME NET any -> \$EXTERNAL NET \$HTTP PORTS (msg: "MISP e1856 [] Outgoing HTTP URL: http|3a|//94.23.249.207/dm/Doc25092017.dm"; flow:to server,established; content: http 3a //94.23.249.207/dm/Doc25092017.dm"; nocase; http\_uri; tag:session,600,seconds; classtype:trojanactivity; sid:5669851; rev:1; priority:1; reference:url,https://misp.auscert.org.au/events/view/1856;)

Alert on outbound traffic to this url: http://94.23.249.207/dm/Doc25092017.dm



#### Automatically retrieving indicators via the API

• Snort (NIDS) rule: https://misp.auscert.org.au/events/nids/snort/download/1856

alert ip \$HOME\_NET any -> 185.112.82.64 any (msg: "MISP e1856 [] Outgoing To IP: 185.112.82.64"; classtype:trojanactivity; sid:5669921; rev:1; priority:1; reference:url,https://misp.auscert.org.au/events/view/1856;)

> Alert on outbound traffic on any port to IP: "185.112.82.64". Contacted by Emotet Spyware.

• Suricata (NIDS) rule: https://misp.auscert.org.au/events/nids/suricata/download/1856

alert tls \$EXTERNAL NET 443 -> \$HOME NET any (msg: "MISP e1856 [] Outgoing URL: https/3a//moriartylawltdmy.sharepoint.com/personal/kamal alam moriartylaw co uk/ layouts/15/guestaccess.aspx?docid=0e82c6b3c80dc4 3c6b4cc3bea87bfba95&authkey=ARzLqe0rjb tMKCtL5Aea9s"; tls cert subject; content: "moriartylawltdmy.sharepoint.com"; nocase; pcre: \moriartylawltd-my.sharepoint.com\\$/"; tag:session,600,seconds; classtype:trojanactivity; sid:5669841; rev:1; priority:1; reference:url,https://misp.auscert.org.au/events/view/1856;)





#### Automatically retrieving indicators via the API

• RPZ file - DNS firewalls: https://misp.auscert.org.au/attributes/rpz/download/null/1856

\$TTL 1w;@ SOA localhost. root.localhost (2017092500 2h 30m 30d 1h) NS localhost.; The following list of IP addresses will timeout.32.64.82.112.185.rpz-ip CNAME rpz-drop.32.207.249.23.94.rpz-ip CNAME rpz-drop.32.99.204.23.94.rpz-ip CNAME rpz-drop.

Timeout resolution attempts for IPs: 185.112.82.64, 94.23.249.207 and 94.23.204.99

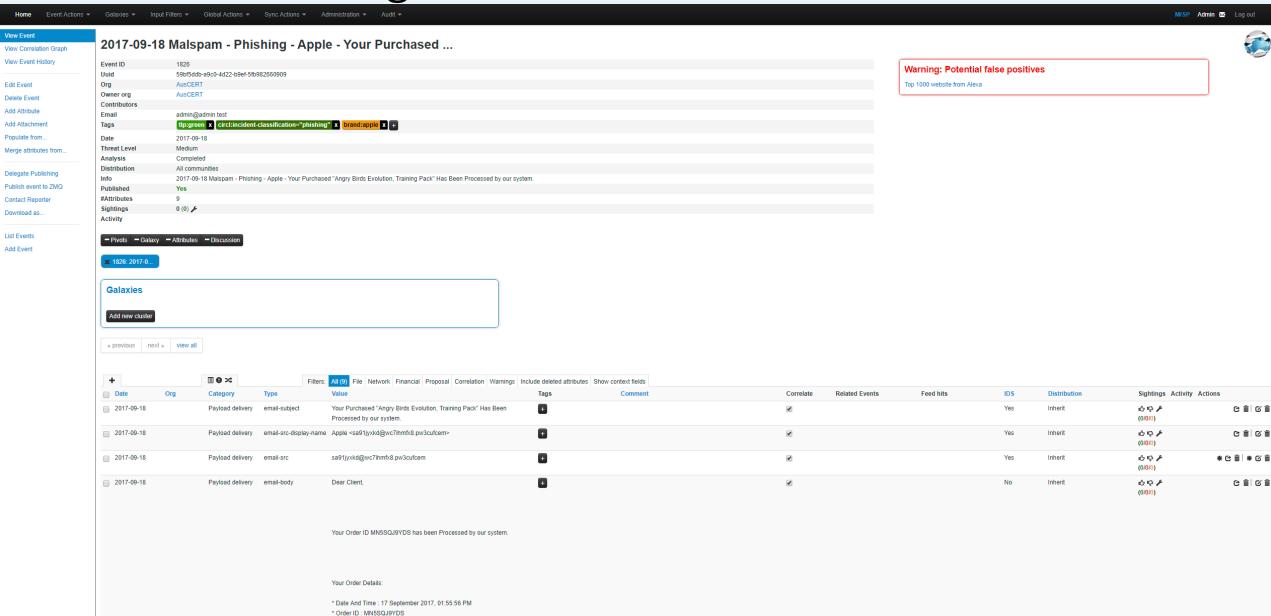
• URL list (TXT file): https://misp.auscert.org.au/attributes/text/download/url/null/1856

http://94.23.204.99/pdf/govia\_invoice.pdf
http://94.23.249.207/dm/Doc25092017.dm
http://94.23.249.207/pdf/Telstra\_Bill.pdf
https://holmefarmproducemy.sharepoint.com/personal/sharon\_holmefarmproduce\_co\_uk/\_layouts/15/guestaccess.aspx?docid=0d97d8d992fa247dca674890a8c
0042c3&authkey=ATe3zGWUcWMt-p4q8F8xBIk



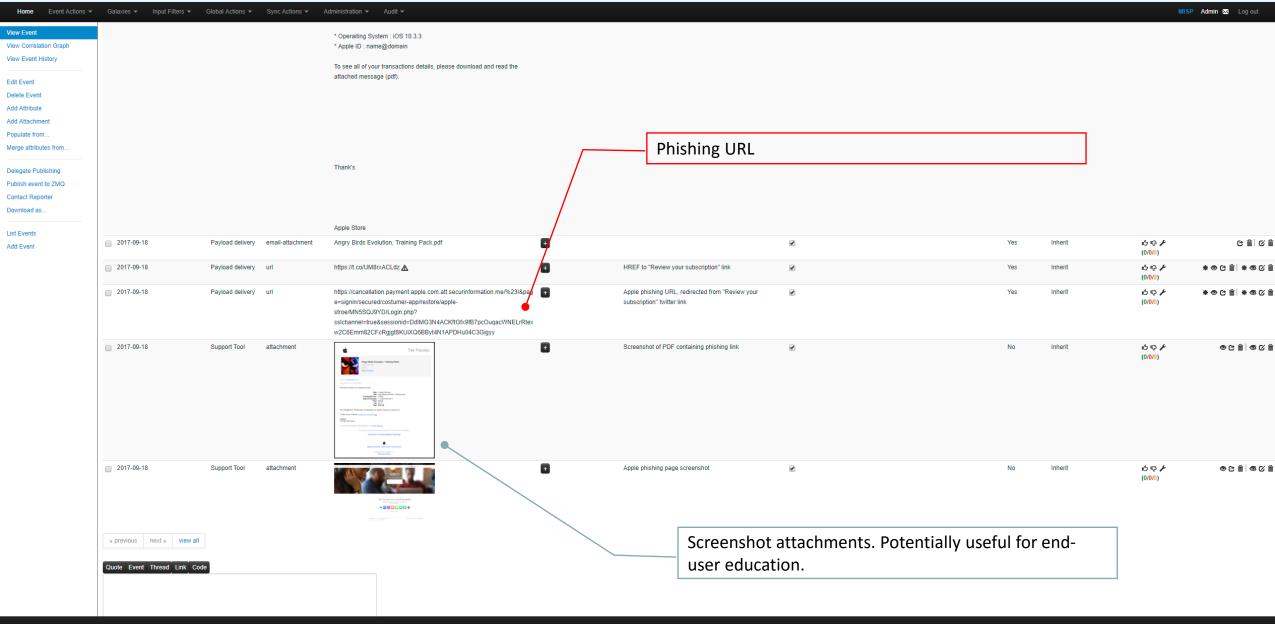


## MISP: Phishing Event





## MISP: Phishing Event – part 2



Powered by MISP 2.

### Phishing Event – part 3



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# Questions?

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