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Securing Your Live IP Production Workflows - Freeing Your Creativity

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Network Security – Some Context

- ST2110 is being rolled out for Live Production and Playout
- Many are live sporting and UHD use-cases
- This content and its delivery is highly valuable
  - The content has value, it's a piracy target
  - The content drives viewing figures, and so revenue
  - What is the advertising revenue from the Superbowl worth??
- Both the content, and the production capability need to be safeguarded.

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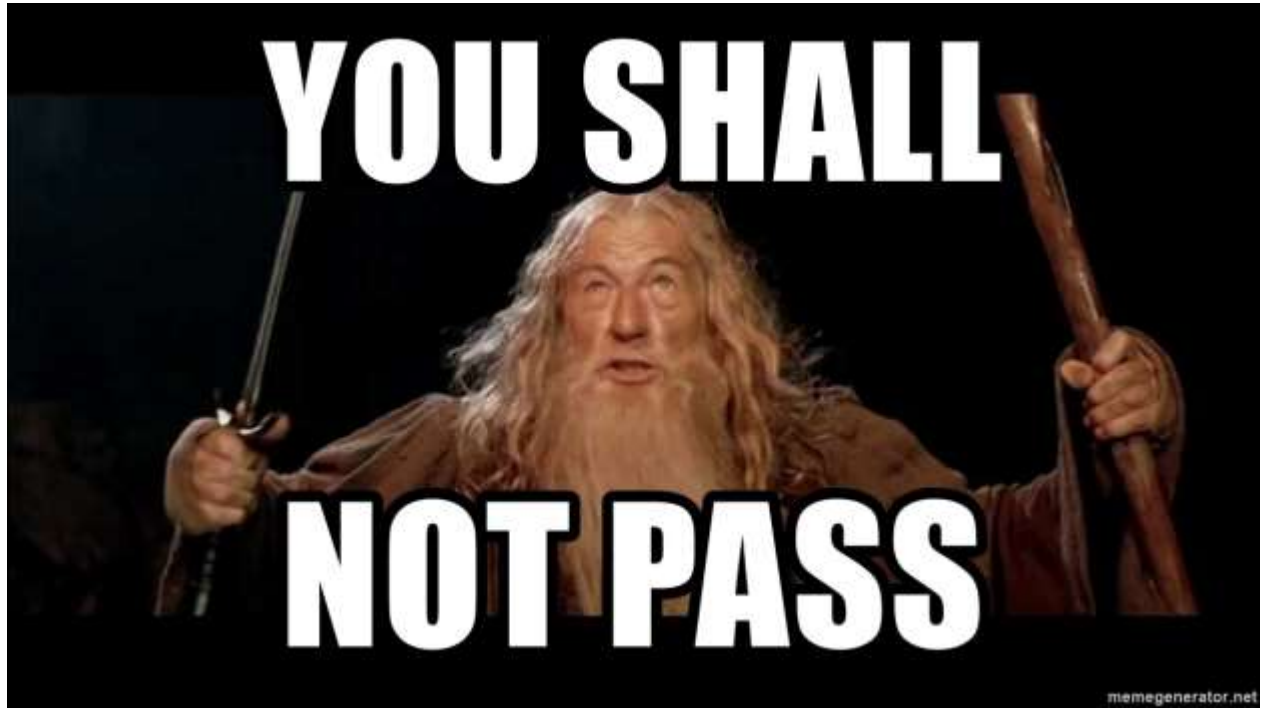
Network Security

First Question Is…

WHAT IS SECURITY?



IS IT ONLY ABOUT BLOCKING TRAFFIC?

NO – BUT THAT'S PART OF IT!

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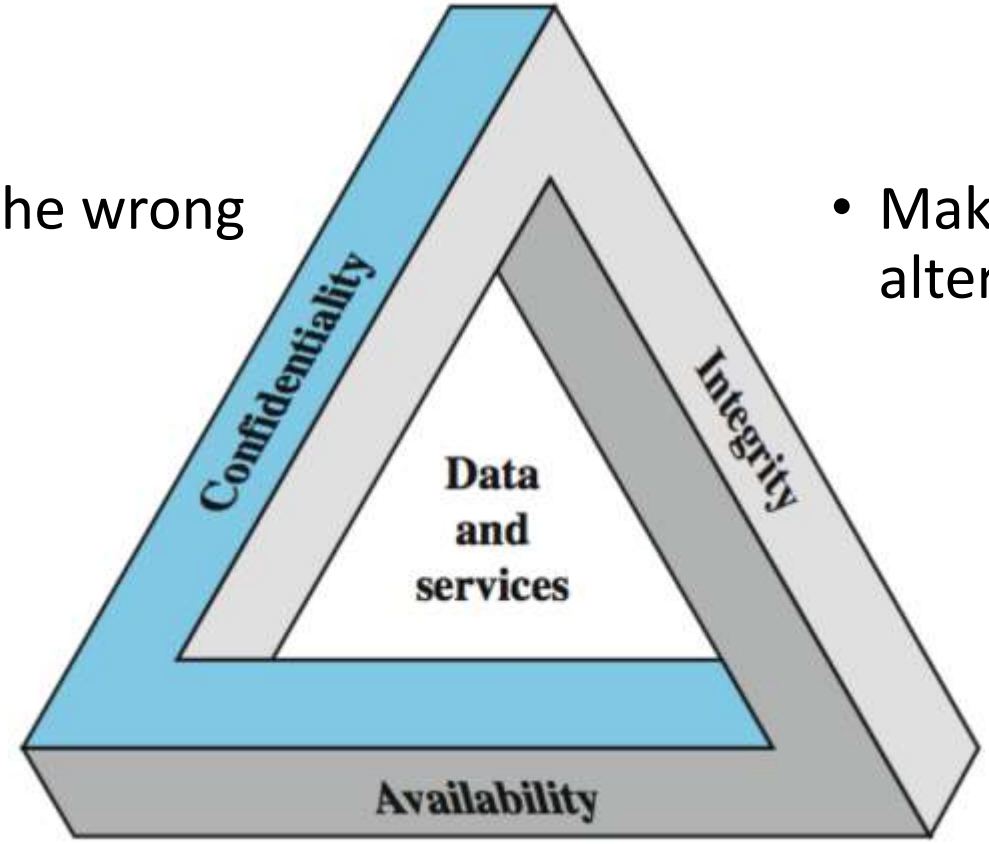
Network Security – Some Context

- Privacy – don't let the wrong people get access



- Make sure content is not altered

- Data CAN be accessed through a system that is maintained

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Network Security – What Should I Do?

- Injecting a bad source
  - What to do?
- Only Layer 3 interfaces?
  - What's the downside?
- Use DHCP for IP assignment?
  - Do all interfaces come up?
- Start using 802.1x?
  - Everywhere, including remotes?

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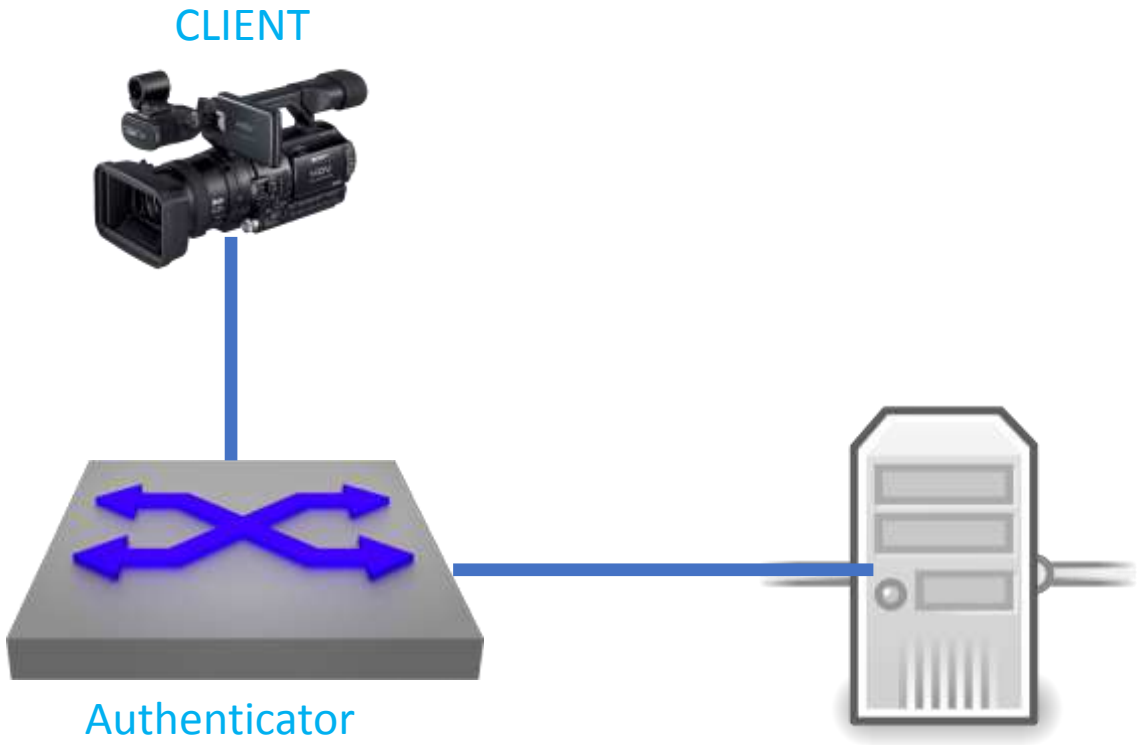
Network Security – What is 802.1x?

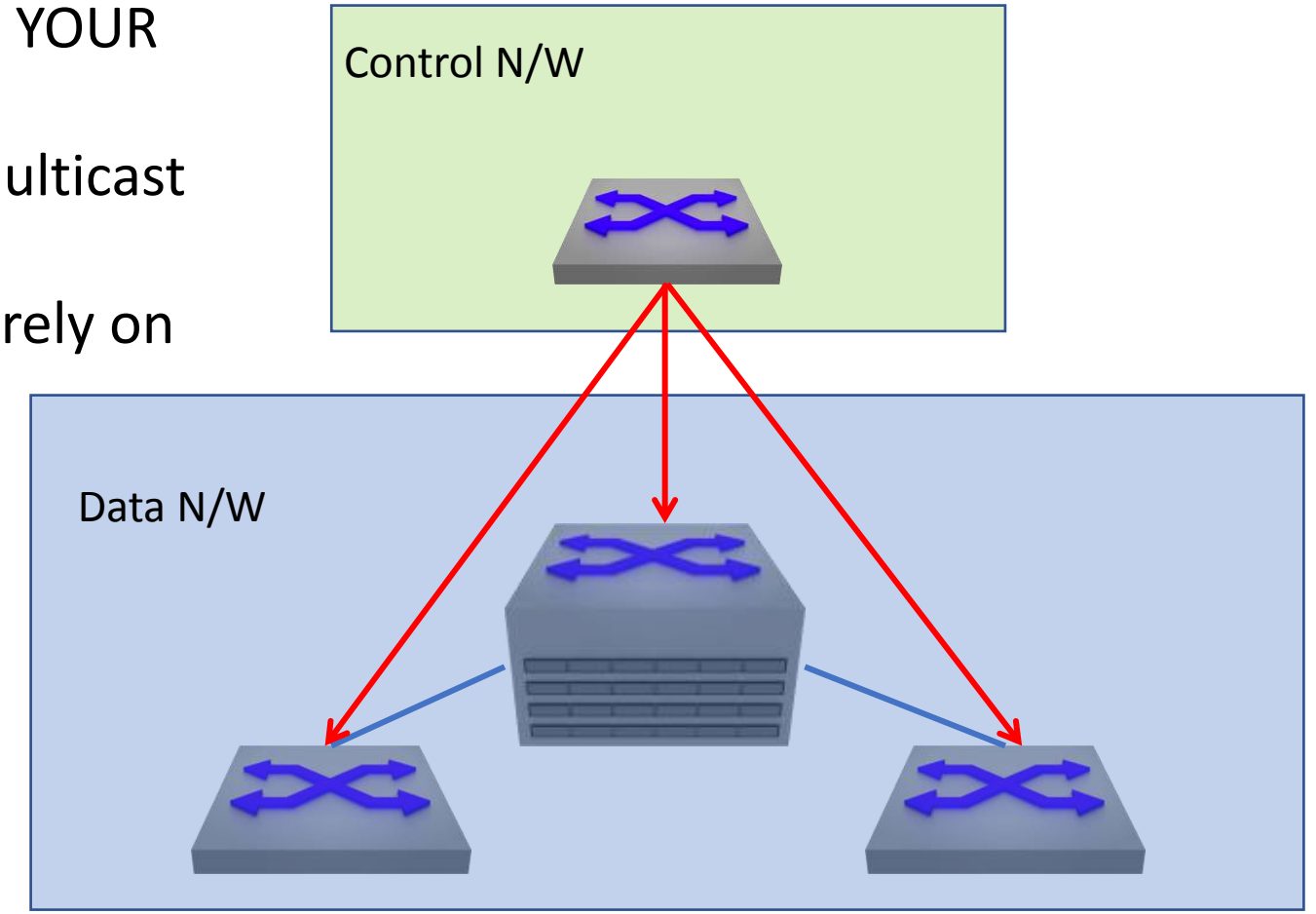


- Switch starts message exchange when interface has status page or when port receives a packet with an unknown source frame
- An authenticator starts the negotiation by sending an EAP-Request/Identity packet. A supplicant starts the negotiation with an EAPOL-Start packet, to which the authenticator answers with a EAP-Request/Identity packet.
- The supplicant answers with an EAP-Response/Identity packet to the authentication server via the authenticator.
- The authentication server responds with an EAP-Request packet to the supplicant via the authenticator.
- The supplicant responds with an EAP-Response.
- The authentication server transmits either an EAP-Success packet or EAP-Reject packet to the supplicant.
- If an EAP-Reject is received, the supplicant will receive an EAP-Reject message and their traffic will not be forwarded.

Network Security – Bandwidth Mappings?

- Broadcast Vendors want to secure YOUR multicast traffic….
- Restrict the bandwidth of every multicast stream – that's a lot in 2110
- Stitch together the routes – don't rely on hashing with multiple links

- Do even more… use policers on ingress!



Network Security – How to talk to the network?

- The management plane should be well secured
  - Enforce strong passwords and individual accounts for switch users
  - Ensure users access rights are limited to functionality that they need
  - Enforce minimum of SSH or stronger - valid certificates, Tacacs, or Radius authentication
- Ensure all API's are encrypted (HTTPS)
- SNMP should be read-only unless otherwise specified
- Unused protocols should be excluded (control plane ACL's)

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Network Security – Who is allowed where?

- Only some IP addresses can make it through the network?
- Restrict based on source IP and MAC
- Forbid certain multicast groups from entering the system

USE AN ACCESS CONTROL LIST

“do not allow 237.0.0.0/16 to leave SW1 on interface 3/51”

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PTP Security

- PTPv2 does not provide a whole lot of security
- PTPv2.1 will add some security, and be backwards compatible
- Many PTP end points are capable of adopting the role of master
- The ability to configure a BC port as ”Master only” is really useful!

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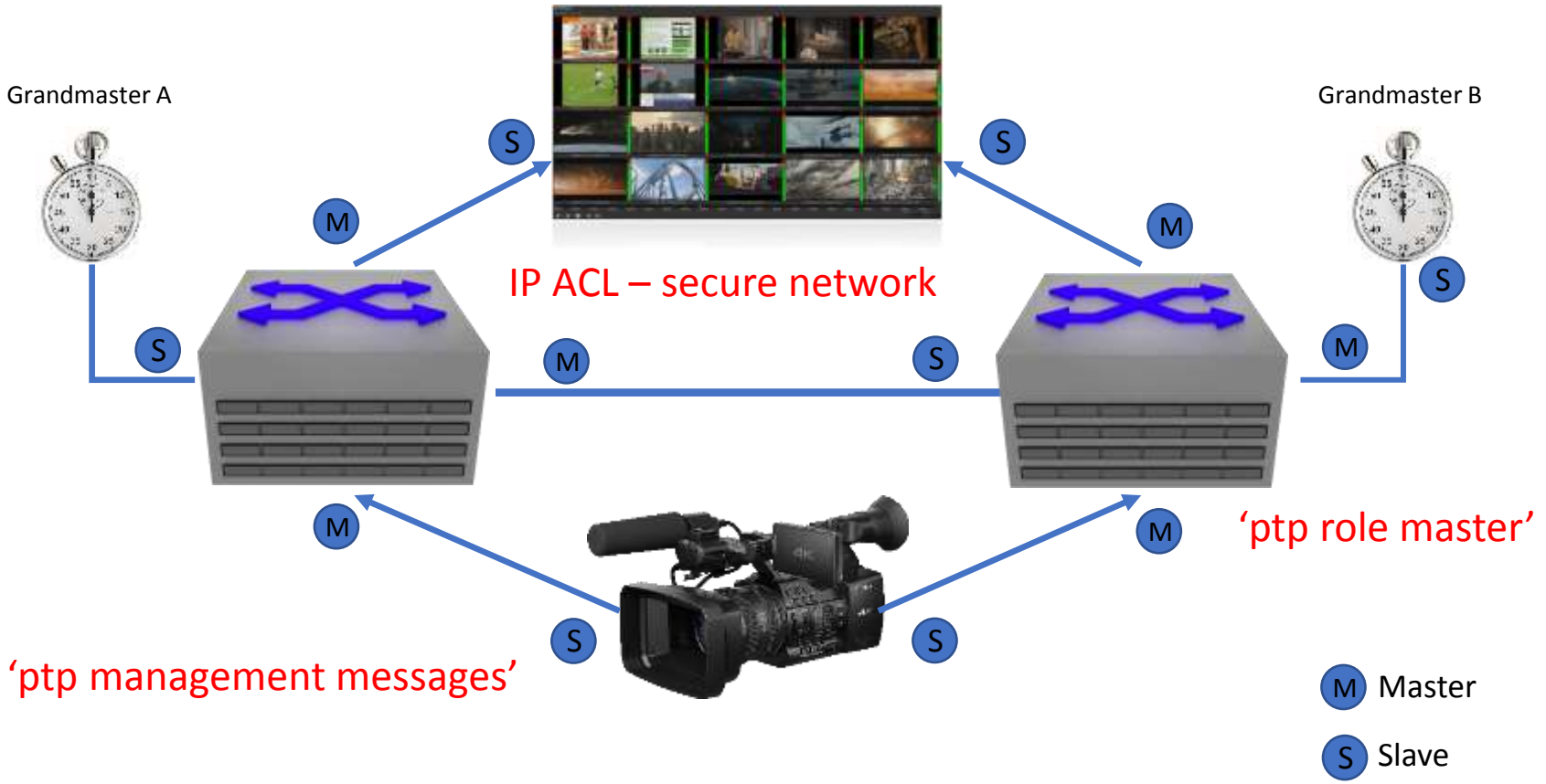
PTP Security



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PTP Telemetry

- Security is not just about restrictions
- It’s also about data collection to be a few steps ahead
- Stream data, counters, anything you need…
- Producing data is one thing – being able to access it is another!

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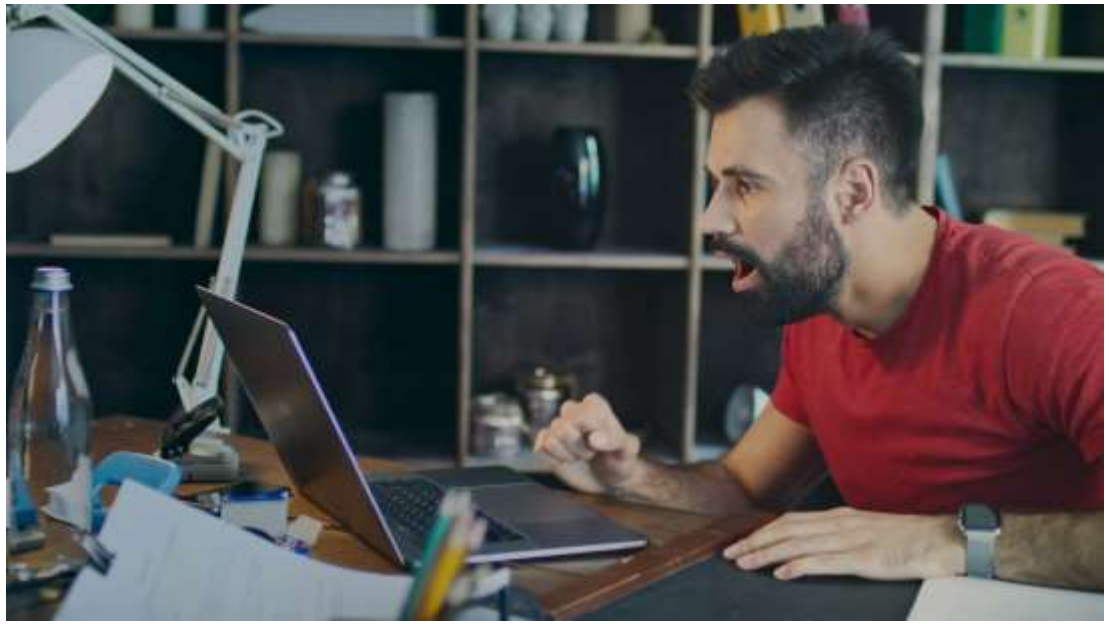
PTP Telemetry

You will be amazed at what data you can tap into!



- Performance of multiple BC’s
- Skew across each BC
- Verify all BCs locked to same GM
- See trends within fine grain data
- Counters… and write scripts to trigger an event IF counters are skyrocketing

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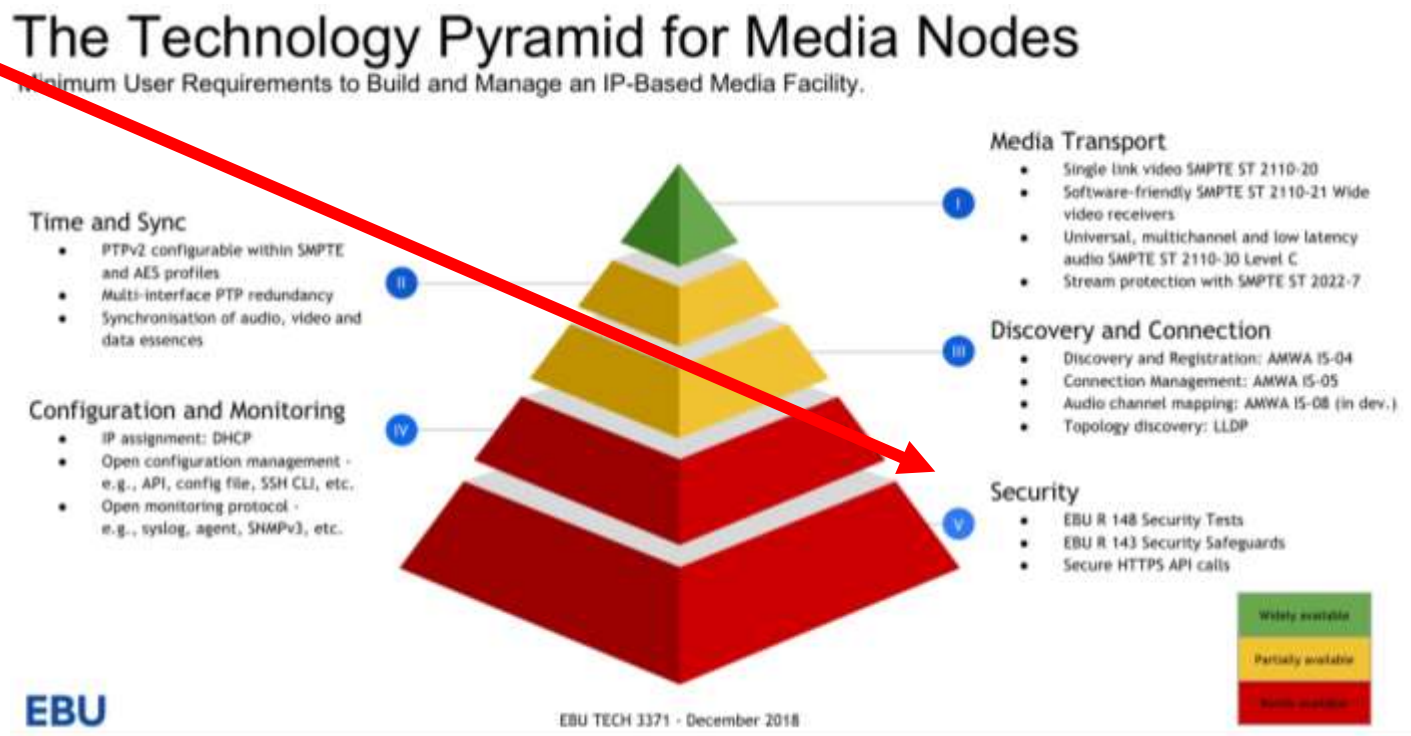
Network Security in Standards

- As an indicator of where we are in the Security Journey, take a look at the EBU's Technology Pyramid…
- It's identified in phase 5
- We can do more…



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Conclusions

- Security is vital - it's not an after thought, and needs to be built in from the start.
- Decide how much you need, and how you can achieve your workflow objectives, while remaining secure!
- Like all objectives, security also needs to be measured – build a system that is both secure, and provides monitoring and telemetry that allows positive verification of that security

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Thank You

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