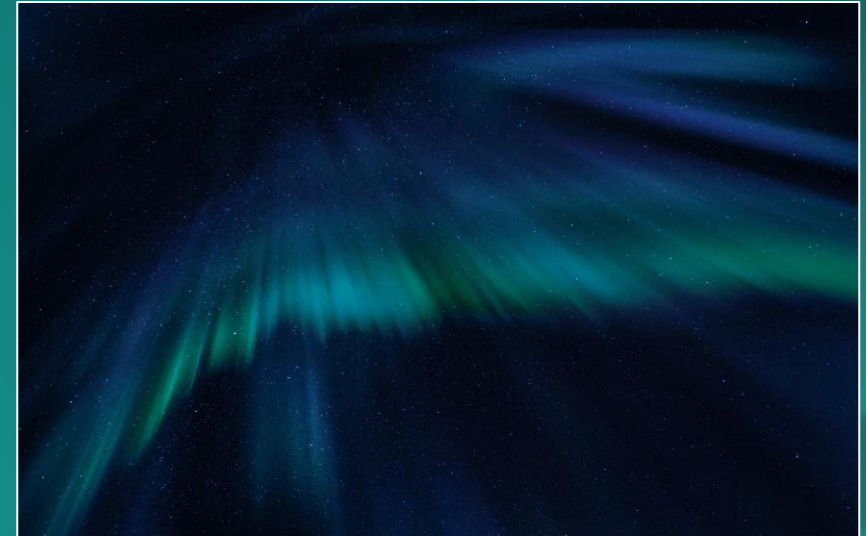


Understand what is going on with your stream

Troubleshooting IP delivery network related problems

Adi Rozenberg, Alvalinks

IP SHOWCASE™



Introduction to Alvalinks



Alvalinks was founded by Broadcast and Networking veterans to bring innovation

Alvalinks focus on simplifying the road to the cloud and in the cloud, by way of delivery supported by AI toolset

Alvalinks is a VSF member

Adi Rozenberg is a long-time technology contributor to the RIST specifications



Understanding what is going on with my Stream



Why good transport is so important?

Why should I care?

What do I need to know?

What do I need to do?

How do I achieve that?

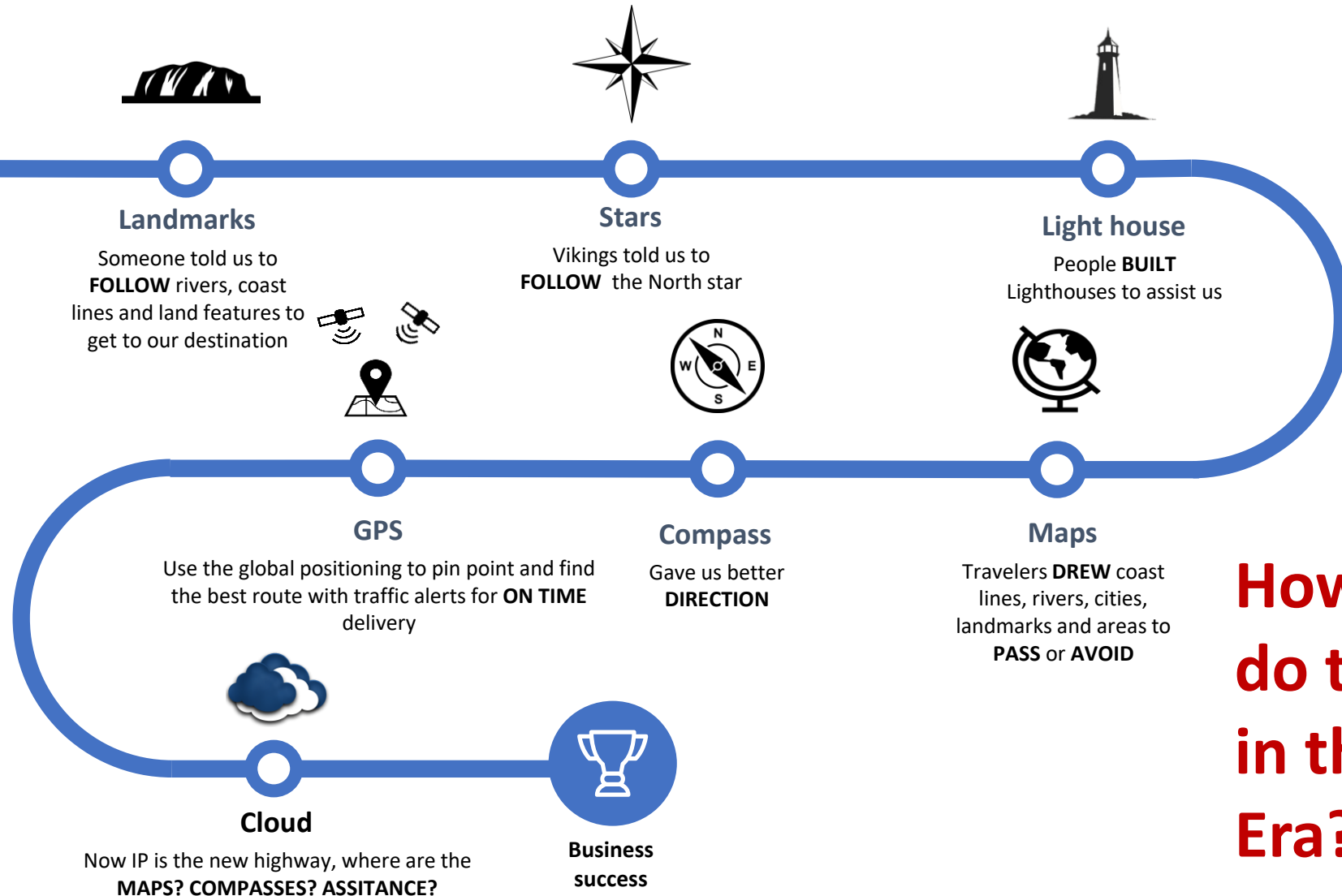
This presentation will address these questions



Why transport is so important?



In the past we needed guidance tools to reach our destination



How do we do the same in the cloud Era?

Internet vs Fiber



Fiber is similar to a train



**Reliable, single track
Piece of mind**

Internet is similar to car traffic



**You have choices and options
But you also have other users and
traffic to consider**



Why should I care

- **IP based transport** is becoming the new backbone of our industry with RIST, SRT, NDI, JPEG XS and ST2110 protocols fueling new applications, cloud workflows and a true enablers of the next technology leap to the cloud.
- Networks are complex "**living organisms**" that are dynamic and have unpredictable behavior and performance.
- **Control or visibility** - the cloud is yet another challenge that we need to overcome; it is increasing dramatically with scale, sites, interconnection between networks, and the integration of cloud operations – those are not under our control or visibility.



What is so different this days?



Remember the good old days?

ASI was a **SIMPLE** point to point

Satellite gave you **ASSURED** delivery and distribution

Fiber was **PRIVATE**

NOW, You are a part of a growing community of users

- Other departments in your organization have some business in the cloud (production, storage, SaaS etc)
- Network may be shared by other organizations and streams
- Over time the network will be come crowded

But my IT takes care of these, NO?



Ask Yourself:

Did the IT get the E-mail **on time**?

Did they open the **ports**?

Did they setup the **QOS** ?

Did they secure the right **SLA** for me?

Do you have the right **bandwidth**?

Did the DevOps guys **took care** of the cloud ingest?



If the Answer is NO – you may be in trouble

Isn't reliable streaming enough?



SRT, RIST, NDI and proprietary transport protocols have a share tasks:

Reliable delivery

Secure delivery

On time output

They are based on the assumption that the **network is there.**

It is your task to guaranty this all the time



What do I need to know in advance?



Connectivity

- Can I **reach** my destination?
- Do I have the correct open **ports**

My available **network paths**

- RTT
- Number of Hops
- Time to every hop
- MTU limits
- Packet loss
- Jitter

Upload/download speed: max bitrate without errors, max bitrate with errors, packet loss, jitter

Abnormal artifacts for example; other flows, time interferences, network behavior etc.



What do I need to do while streaming?

Remember: **you are NOT alone**

You need to identify whatever may cause your stream to slowdown or breakdown:

- RTT increase
- Number of hops increase/decrease
- Jitter increase
- Packet loss increase
- Additional flows going from the source or entering the destination
- Seamless switching delay



What should I Keep track of?



- Number of **hops** – detect network routing changes
- **RTT** – detect delay that may impact Jitter events, ARQ recovery SMPTE2022-7 delay
- Number of **Packet loss** in a window of time
- Packet loss **behavior** – salt and pepper vs burst
- **Jitter** increase – watch out for impact of packet loss
- Multiple **retries** – reverse link issues or increase on pkts loss
- Link bandwidth **changes** – cause excessive loss
- Other **flows** on your links – bandwidth consumption



What are the options in my bag of tricks to identify a problem



- Nmap – test open UDP/TCP ports in the destination Firewall
- Ping – test RTT, sample packet loss (poor results)
- TraceRoute/Tracepath – test number of hops, RTT based on Ping for each hop
- Iperf – test upload speed, max bandwidth, Packet loss and Jitter
- Tcpdump – capture packet and detect other flows
- Vnstat – report on Rx/Tx bitrate and packet rate to detect bandwidth drop
- Protocol specific reports of bandwidth, packet loss, packet rate



How do we isolate and avert it a problem

Trust and Verify everything before starting any live stream

Use more than one Link to assure **redundancy**

Monitor the stream behavior

- Watch for packet loss : spread or burst
- Unrecovered events
- Jitter increase
- RTT reports
- Unknown flows

Test the link bandwidth from time to time

Don't allow your connection to go wild on you





Thank you



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Any Questions?

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