

Active Measurement on the Defense Research and Engineering Network (DREN)

GMI-AIMS-5 Workshop

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DREN Ark Locations + Hawaii & San Diego



Security Gateways to 'H Root' DNS

```
pdykstra@fireball:~$ ./dpx-ping.py h.root-servers.net
```

```
5a0-us.dpx    15.78 ms
```

```
dnj-us.dpx    26.94 ms
```

```
plv-us.dpx    15.24 ms
```

```
pym-us.dpx     0.66 ms    [instance at APG, MD]
```

```
rto-us.dpx     5.46 ms
```

```
san-us.dpx     2.20 ms    [instance at SanDiego, CA]
```

```
scm-us.dpx    13.67 ms
```

```
wj1-us.dpx    51.65 ms
```

Milliseconds to Anycast DNS services

SG	Location	Google 8.8.8.8	Cloudflare 1.1.1.1	HE 74.82.42.42	Level3 209.244.0.4	Quad9 9.9.9.9
5A0	Atlanta, GA	25.29	0.78	16.53	1.25	0.60
DNJ	Denver, CO	37.84	26.21	33.44	27.36	33.58
PLV	New Palestine, IN	19.90	8.32	13.92	9.47	14.07
PYM	Aberdeen, MD	2.85	2.83	2.49	3.34	2.89
RTO	Rialto, CA	68.66	2.11	1.60	1.88	66.91
SAN	San Diego, CA	73.83	7.33	6.92	7.43	72.85
SCM	Sacramento, CA	64.73	11.04	10.88	11.00	63.70
WJ1	Waipahu, HI	114.08	0.62	0.57	55.32	112.20

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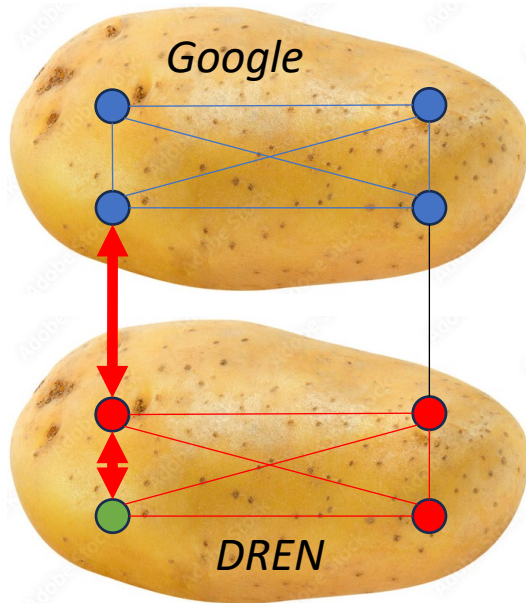
	SG	Location	Google 8.8.8.8	Cloudflare 1.1.1.1	HE 74.82.42.42	Level3 209.244.0.4	Quad9 9.9.9.9
#2	5A0	Atlanta, GA	25.29	0.78	16.53	1.25	0.60
	DNJ	Denver, CO	37.84	26.21	33.44	27.36	33.58
	PLV	New Palestine, IN	19.90	8.32	13.92	9.47	14.07
#1	PYM	Aberdeen, MD	2.85	2.83	2.49	3.34	2.89
#3	RTO	Rialto, CA	68.66	2.11	1.60	1.88	66.91
	SAN	San Diego, CA	73.83	7.33	6.92	7.43	72.85
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Milliseconds to Anycast DNS services

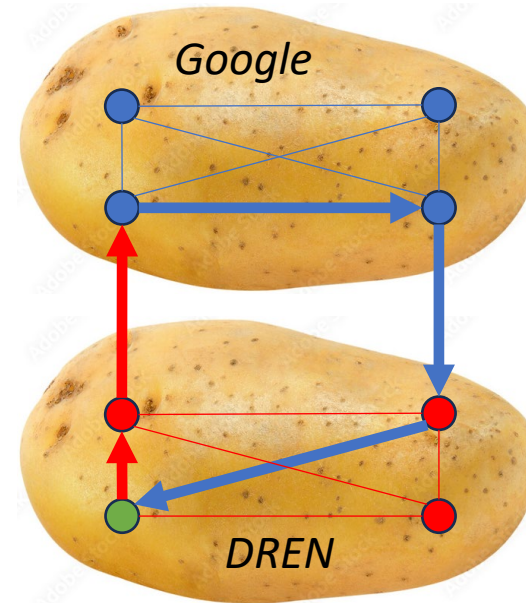
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Anycast to Google

- How it should work



- How it might be working
if Google thinks the green node is on
the east coast



Where do they think DREN PX is?

MAXMIND Products Resources Company Sign In

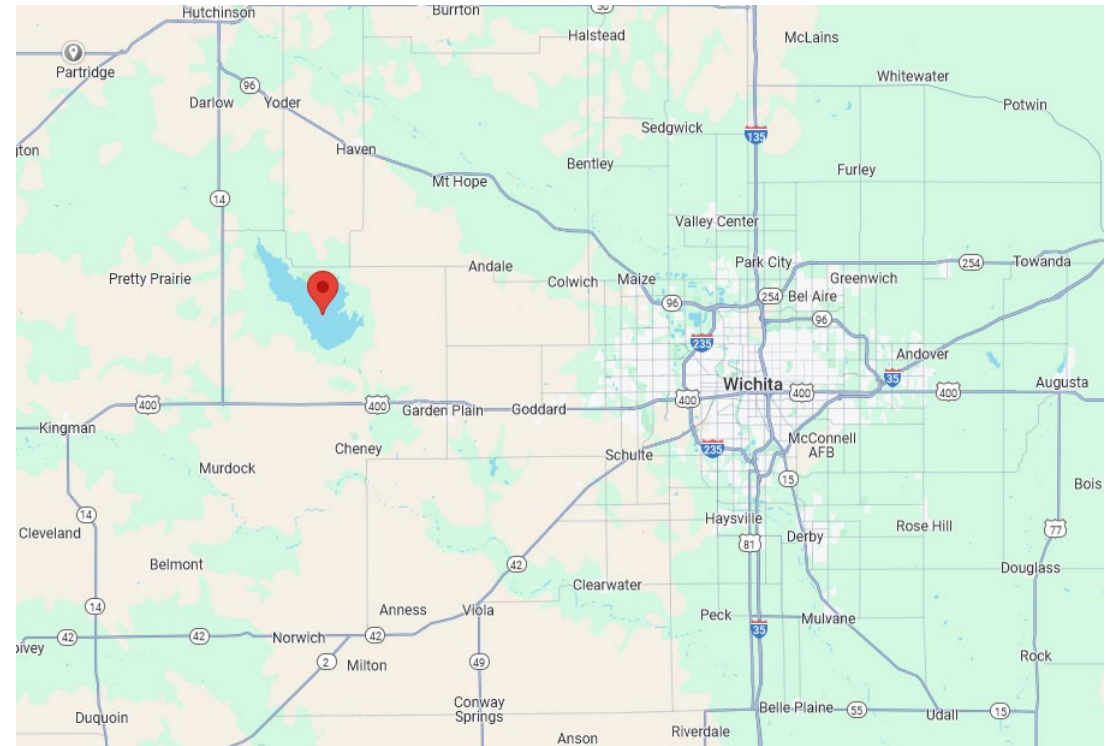
GeoIP web services demo GeoIP databases demo Locate my IP address

Enter up to 25 IP addresses separated by spaces or commas

143.56.1.250

View results

IP Address	Location	Network	Postal Code	Approximate Latitude / Longitude*, and Accuracy Radius	ISP / Organization	Domain	Connection Type
143.56.1.250	United States (US), North America	143.56.0.0/17	-	37.751, -97.822 (1000 km)	US Department of Defense	-	Cable/DSL

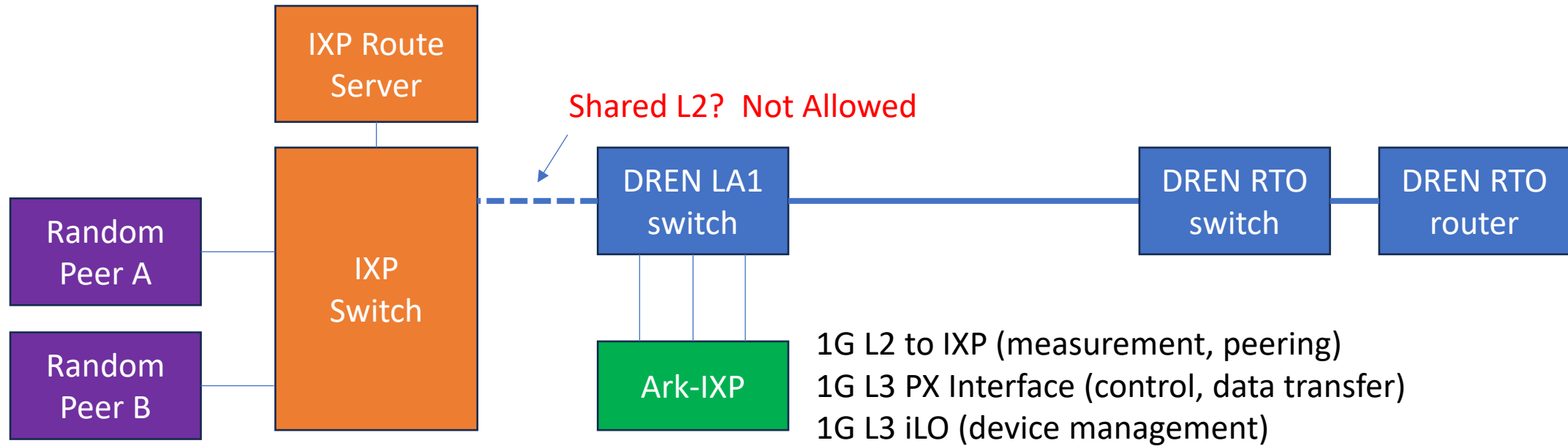


Scamper trace from DREN Hawaii to Korea

trace from wjl-us.dpx to 112.106.53.191 KR

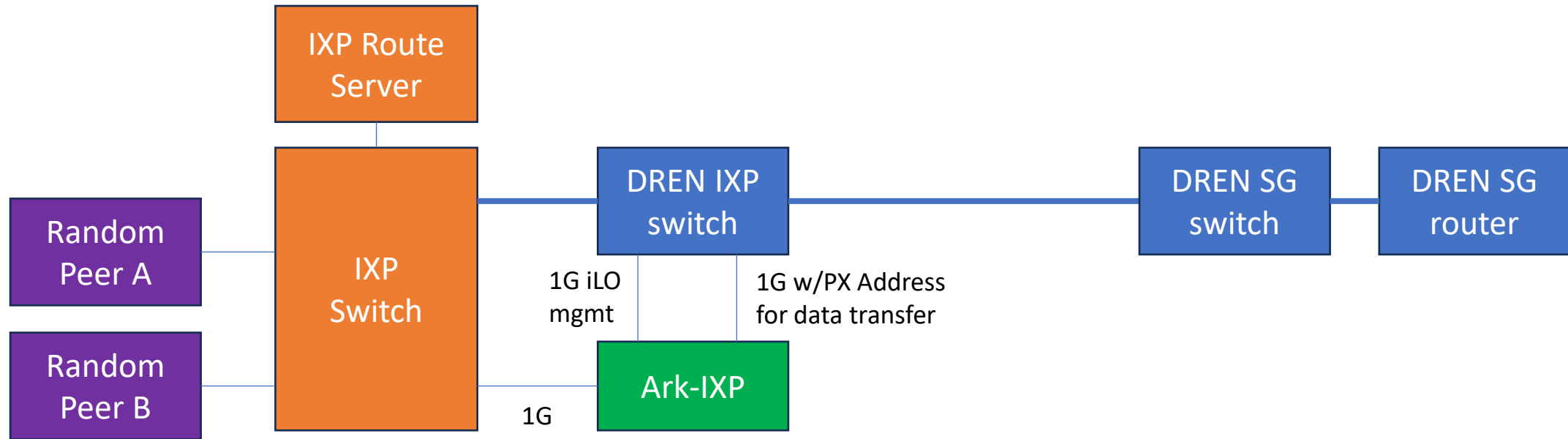
1	64.62.148.101	1.1	US	port-channel4.switch2.hnl1.he.net	US-2ms
2	64.62.148.101	0.9	US	port-channel4.switch2.hnl1.he.net	US-2ms
3	184.104.197.110	47.1	US	port-channel4.core3.lax2.he.net	US-1ms
4	64.62.148.105	48.0	US	e0-1.switch4.lax1.he.net	US-3ms
5	207.45.208.18	47.1	cisco US	ix-be-40.ecore1.eq1-losangeles.as6453.net	US-1ms
6	206.82.129.42	202.2	US	if-ae-55-2.tcore1.eq1-losangeles.as6453.net	US-1ms
7	64.86.252.65	200.2	US	if-ae-6-20.tcore2.lvw-losangeles.as6453.net	US-2ms
8	64.86.252.109	155.5	huawei JP	if-et-53-8.hcore2.kv8-chiba.as6453.net	JP-3ms
9	120.29.211.2	155.8	JP	if-et-1-2.hcore1.kv8-chiba.as6453.net	JP-2ms
10	116.0.67.33	202.3	juniper HK	if-ae-16-2.tcore1.hk2-hongkong.as6453.net	HK-2ms
11	180.87.112.31	197.0	juniper		HK-2ms
12	157.197.66.45	233.5	juniper	u45.ppp66.samsung.co.kr	KR-3ms
13	157.197.80.189	233.4	juniper	u189.ppp80.samsung.co.kr	KR-3ms
14	*				
15	*				

Ark-IXP at DREN Exchange Points?



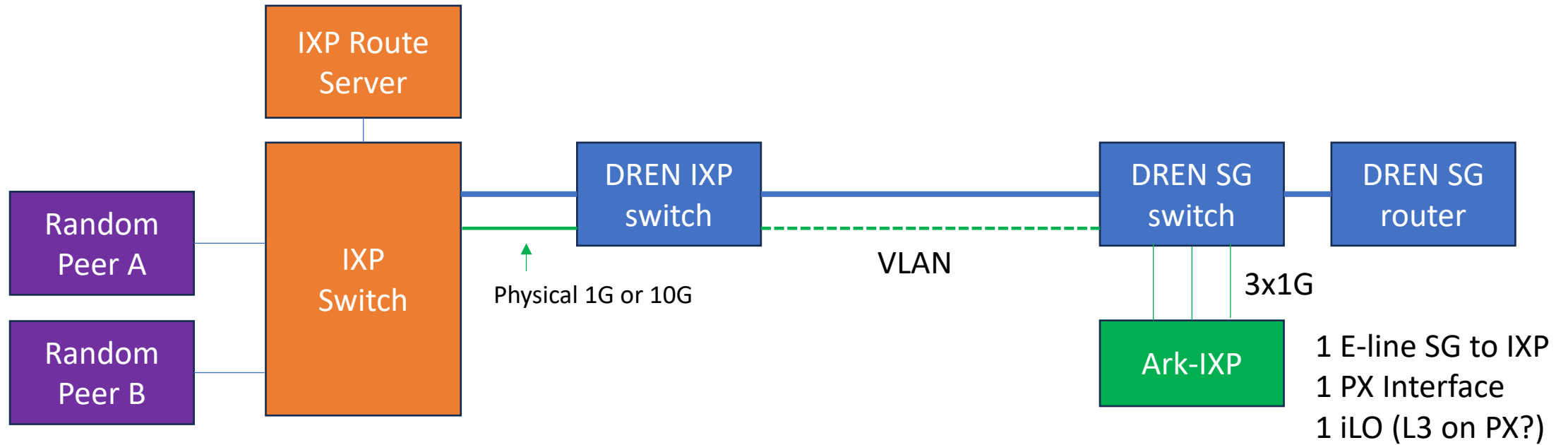
Ark-IXP at the Exchange

separate exchange port

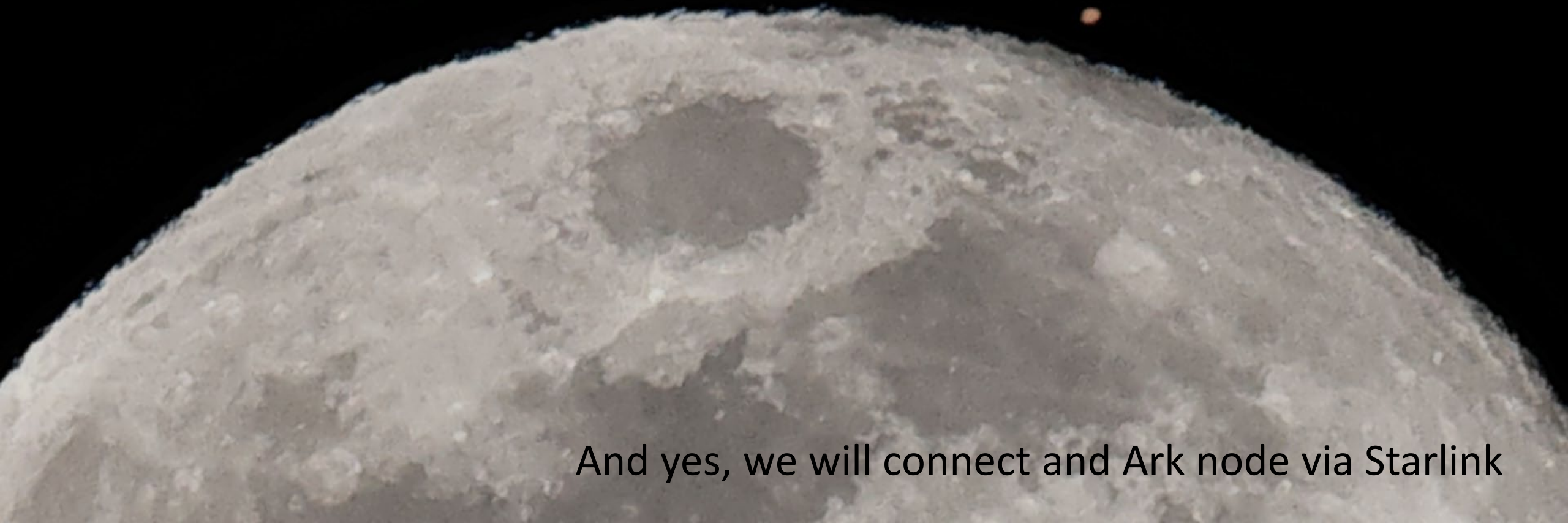


Ark-IXP at the Security Gateway

remote rack space (“free”)



Thank you,
Phil.Dykstra.ctr@dren.hpc.mil



And yes, we will connect and Ark node via Starlink