

IPv6 Rollout to the mass market

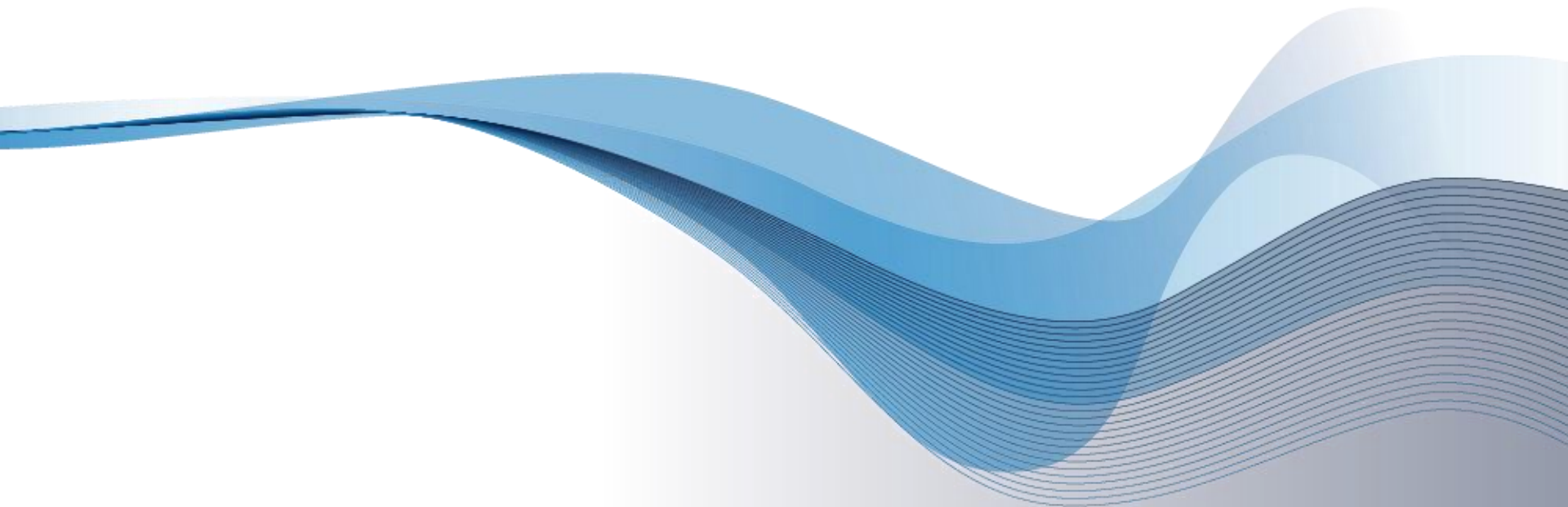
Building Africa's digital future

1st September 2016

The Goals...



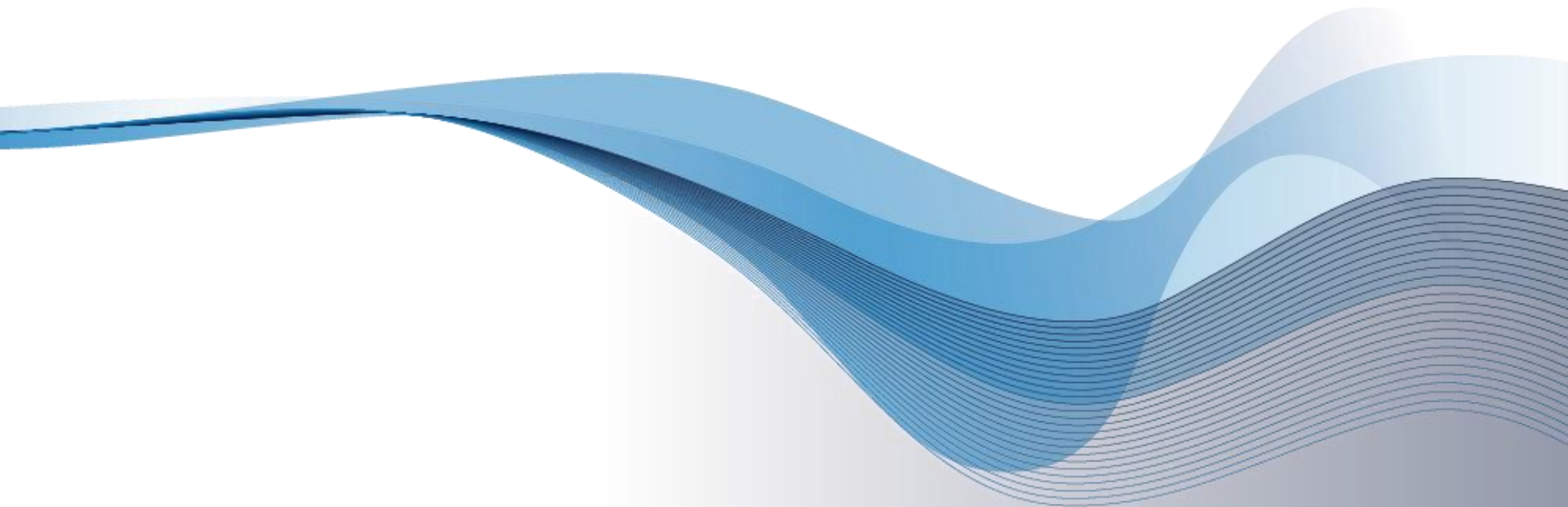
- Get IPv6 to the consumer – beyond the edge of the network
- Ensure the service to the customer was transparent
 - The customer doesn't need to know v4 or v6
- Roll it out to live customers without service impact – downtime was not an option



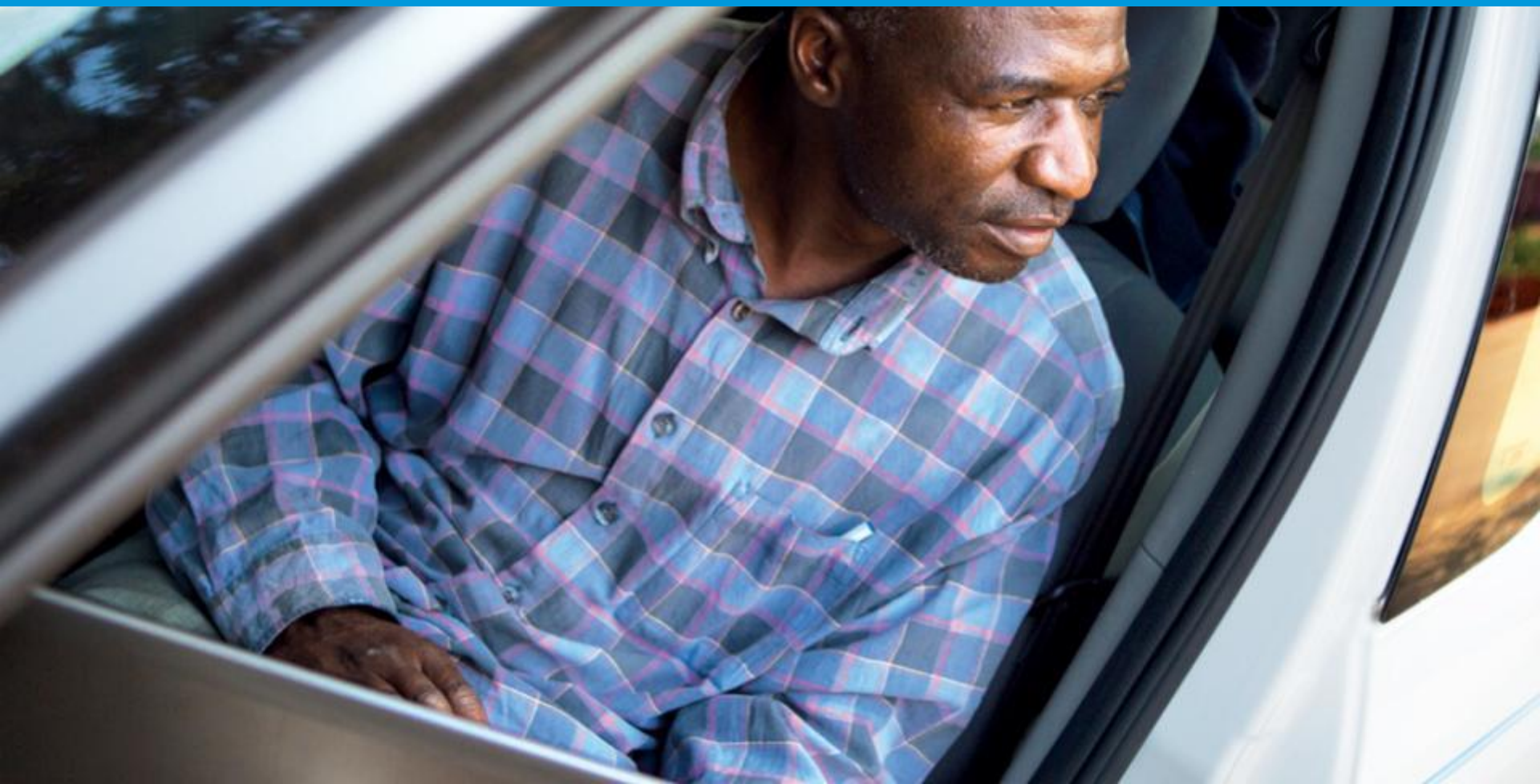
The very basics...



- An addressing plan – we keep it simple, everyone gets a /48
- Lose the concept of dynamic addresses – everything is static
- Enable the BRAS – get it allocating the space
- Ensure the CPEs are getting the space
- Monitor the traffic – did what we do actually work?



Our challenges along the way...



The Challenges we faced



- We attempted dynamic V6 allocations and switched to static allocations
- Going with static allocations meant reworking the backend provisioning system.
- Next step was BRAS configuration – this was relatively simple and without issue.
- Then we got to the CPE layer – and the wheels fell off – but more on this in a second.
- Bottom line – V6 is pretty easy until you get to the CPE layer
- Once you get all that working though – you still have to deal with happy eyeballs when you're testing and monitoring

The CPE Issue (1)....



- CPE's had to be cheap – this is a requirement for a mass market product, any CPE that cost too much wasn't going to work
- CPE's had to support TR-069 – the initial work we did was done on Mikrotik's for the metro home customers, which didn't support this – so an alternative had to be found.
- CPE's on the GPON Network (ONT's), are locked to OLT's, so if they didn't support IPv6, it was time to talk to the vendor

The CPE Issue (2)....



- Every CPE we tested had its issues....
 - ALU ONT's did not initially support IPv6 – getting the firmware that did was challenging (and deploying it even more so!)
 - Mikrotik had good V6 – but no TR-069, so its a non starter
 - DLINK's v6 support was fantastic but they have VERY problematic firewall settings
 - TP-Link requires loading OpenWRT – Not realistic for mass deployment
 - AVM Fritz!Box has a half English half German GUI and certain severe limitations with its firewalls.

The final stage...



- We're still deploying Mikrotik CPE's – but we're still looking – AVM is providing hope!
- We got V6 on the ONT's! Both Huawei and ALU ONT's are now V6 tested.
- Our BRAS's are both Cisco and Huawei – no problems here.
- We now have over a thousand /48's allocated and active in Kenya
- IPv6 testing in Zimbabwe is completed.
- Rollout in Zimbabwe will begin to the customers in phased approach in the next 3 weeks, and is expected to take 2 weeks to complete.
- We're also starting testing of V6 on our Zambian LTE rollout

**The sun is setting on IPV4
Liquid is ready for IPv6, is your
ISP?**

