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Automating Customer Equipment Provisioning

“Learn how to accelerate growth and reduce labor costs by automating customer equipment provisioning. This session will cover key technologies like TR-069 and OpenSync/OpenMesh, and explore how to integrate these with your core CMS and business processes. Gain insights into creating seamless and efficient workflows that lead to desired outcomes, helping your business scale faster and more efficiently. Join us to unlock the potential of automation in provisioning customer equipment and enhance your operational efficiency.”

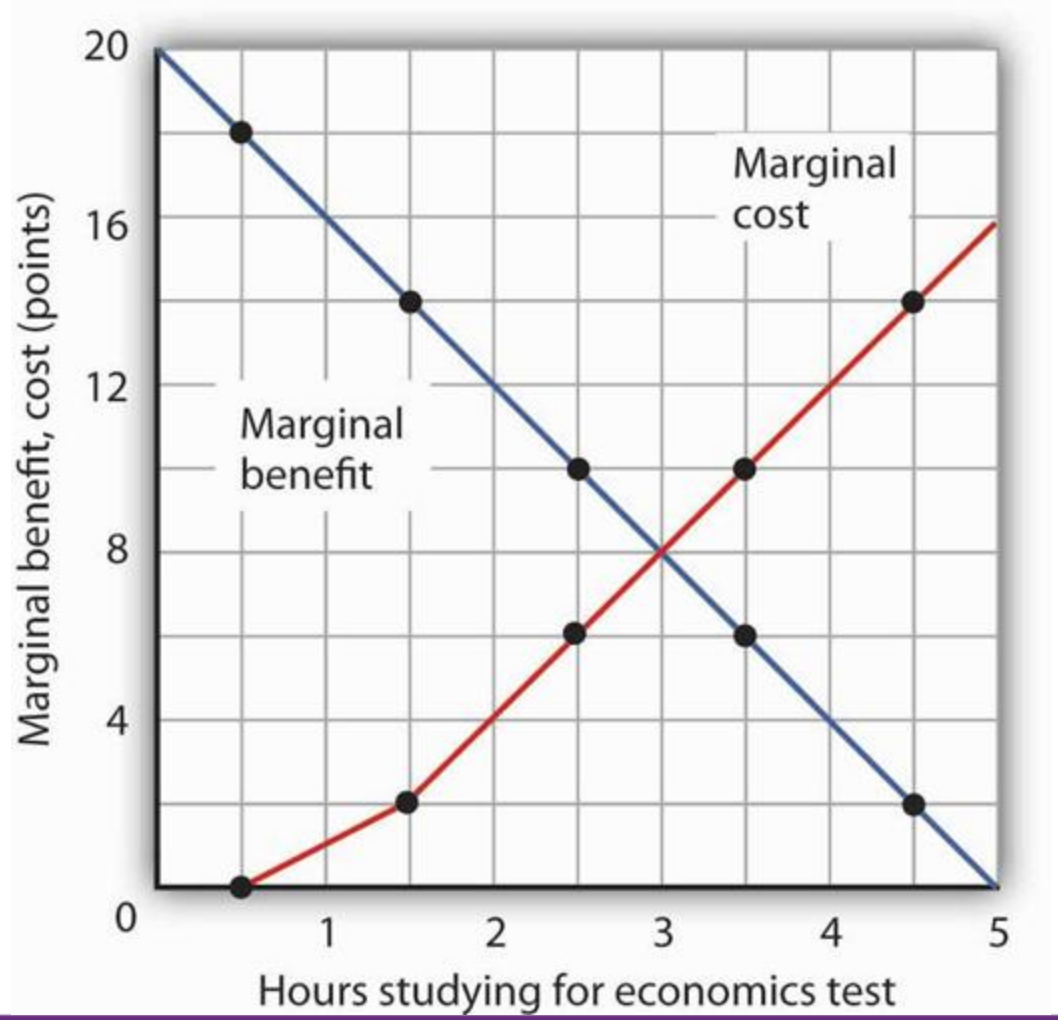
Poll The Room

- Company Size
- Core/infrastructure automation
- Access Layer
  - ONT provisioning
  - RF CPE provisioning
- Layer differentiation (service from pipe)

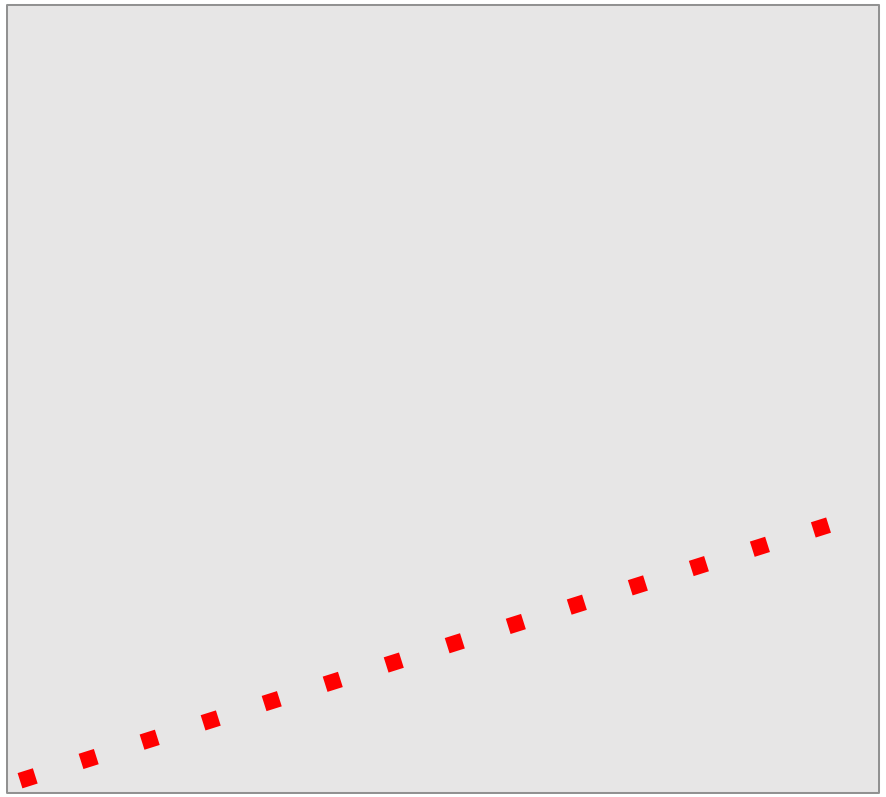
Why?

Why do we automate? When does it make sense?

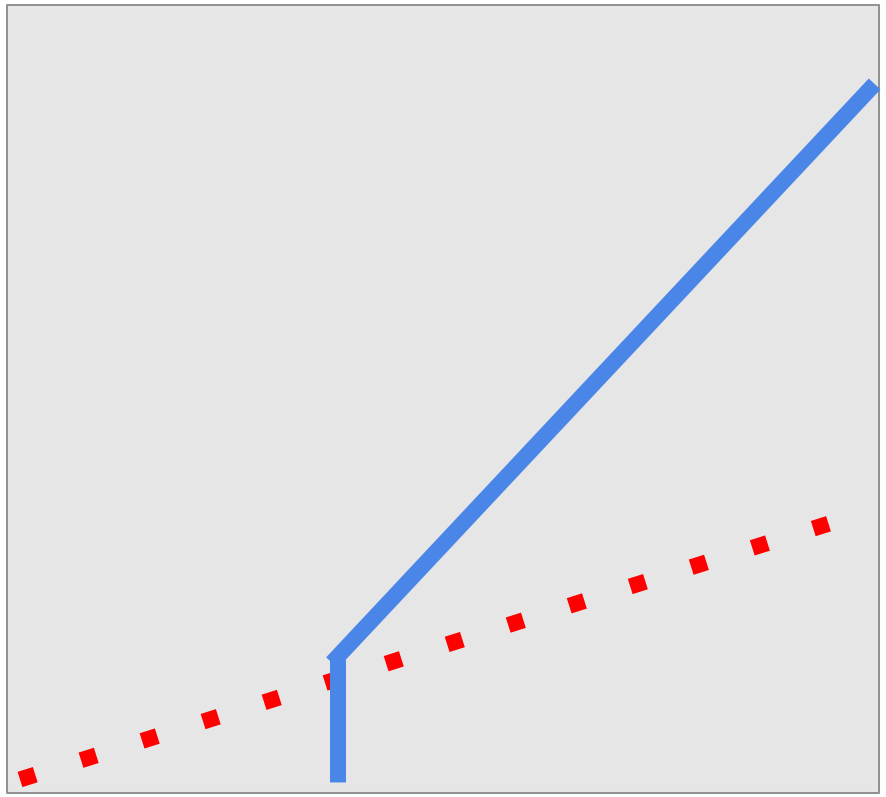
Marginal Benefit: Econ 101



Without Automation



With Automation



Automation Benefits

- Reduced cost
  - Incremental $ savings add up
- Increased accuracy
  - Consistent behavior and workflows
    - Humans aren’t computers

FUT

- BSS/OSS
- M/A/C
- Source of truth

Source of Truth and Verification

- Everyone lies – Dr House
- Dual implementation
  - Three-way handshake vs Mexican standoff
  - Source of *intended* truth
  - Source of *deployed or network* truth
    - Often forms a part of network monitoring

Counter-examples

- When not to automate?
- There is No Stage 2

What?

What to Automate

What to Automate

- What do you do everyday or every install
  - Add customer
  - Add subscription plan
  - Add CPE to account
    - Configuration (Network and customer)
- Automate service calls
  - Pull customer record and network attributes
  - RMA or replacement CPE procedure
- Decommission customer or CPE
  - Remove CPE from service or reprovision
  - Final billing

What to Automate #2

- Goals for automation: **time, cost savings, customer satisfaction** (meaning: User Experience meaning: churn reduction!!!)
- Automation of service activation
  - Software (BSS/OSS: CRM, ERP, Billing, Customer Care
  - Hardware (ONT, WiFi router/Home Gateway, OLT)
- Automation of service assurance
  - Customer Experience Management
  - Service Performance Management
- More integration less errors & lower truck rolls

Vendor lock-in or open standards?

- Size DOES matter!
- Smaller ISP prefers end-to-end solution (ex. Calix, Adtran, Nokia, Huawei, ZTE).
  - Vendor lock-in might be expensive
  - Doesn’t protect your investment
- Bigger and growing ISP prefer to protect investment, selecting best products to secure network openness & interoperability
  - Interop challenge in multi OLT x multi ONT environment
  - Activation challenge with OLT (SSH+SNMP vs NMS API)
    - Licensing
    - OLT performance
  - TR-069 or OMCI for ONT

FTTh activation Interop

- All combination needs to be tested
  - Ex. 3x OLT + 4x ONT = 12x pairs for tests (time consuming easy to automate by your activation framework)
- Ensure OLT vendor supports other brands of ONT (no vendor lock-in)
- Ensure ONT can be provisioned & bootstraped via TR-069 (no need for EMS/NMS, DHCP option 43 supported for ACS discovery)
- Flexible workflow management & creators for agile service development

Service assurance

- Different models for different infrastructures:
  - If ISP owns core network (OLT, fibers) end-to-end service monitoring based on data collected from both end (OLT+ONT) for more network insights
  - If ISP doesn’t have OLT, data from ONTs is the only source of truth
  - TR-069 / TR-369 with bulk data for performance management
- Customer satisfaction
  - Stop talking about speed!
  - Service latency, WiFi
  - WiFi - reason of 30-40% of support calls

CPE LCM

- Full Lifecycle Management
  - Service activation (zero-touch / one-touch provisioning)
  - Service monitoring
  - Firmware upgrades (new patches / security upgrades)
  - Service troubleshooting and diagnostics (speed tests)
  - Wifi management
  - Security enforcement

LCM - Lifecycle Management

CPE - Customer Premise Equipment

Why customers complain about WiFi?

- Don’t know how to change / setup password?
- How to create guest WiFi network for my friends?
- Is it properly secured?
- Poor coverage & my internet is so slow!!!
- WiFi management from the cloud (TR-069 / TR-369)
  - Optimal channel selection for whole network
- Integration with mobile app for self management & self monitoring
- Classification of subscribers
  - Heavy users more interested in having better WiFi (upsell opportunity for faster service & WiFi mesh network)
  - Problematic users - chance for improvement before they churn

How?

Management protocols

How to Automate

- Industry Standards
  - APIs
  - WebHooks
  - BBWF
    - TR-069 (CWMP) TR-369 (USP)
  - Opensync
  - PRPL/RDK-B/OpenWRT

History of TR-069

- 2004 - 20 years on the market!
- Over the years all kind of equipment - ADSL, VDSL, small cells (femto), IP Phones, Set Top Boxes, FTTh ONT, 4G/5G Fixed Wireless Access
- TR-069 (CWMP - CPE Wan Management Protocol)
- Data model extensions: TR-098 - Internet Gateway
  - TR-104 - Voice service
  - TR-135 - Set Top Boxes
  - TR-143 - Performance Tests
  - TR-181 - new data model (called Device:2)
- Supported by all chipset and it’s real industry standard

TR-069 in the nutshell

- TR-069 prons:
  - Interoperable
  - Well defined
  - 20 years on the market so well adapted, no corner cases
  - If well implemented & used very secure

- TR-069 cons:
  - Heavy
  - Difficult to scale
  - Bad for service monitoring and high frequency telemetry
  - Vendors not following official spec for data model implementation

Tooling

- Classic build vs buy
- Open source ACS like GenieACS
  - Hosted locally
  - Engineering manpower to maintain
  - Noone to ask for best practices
  - Not scaling well (15 instances for 250k subs)
  - Lack of TR-369
  - Lots of scripting and custom code needed
  - Doesn’t bring ecosystem support
- Heavy on-prem solution (Vantiva, ZTE) for TR-069
- Cloud based dual stack for TR-069 & TR-369 with WiFi management (AVSystem Cloud ACS)

How To Reach Us

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Slawomir Wolf - founded AVSystem in 2006 which grew organically from startup to global vendor of device management solutions. More than 300 Telcos & ISP worldwide use AVSystem products with 50M+ managed devices globally. AVSystem is leading multi protocol device management, network activation and WiFi management based on open standards (TR-069/TR-369).

For Tier 3 & ISP AVSystem position its Cloud ACS and CEM for WiFi Management.

THANK YOU


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