

The graphic features a dark blue background with a pattern of glowing, curved lines of dots in shades of blue and purple, creating a sense of motion and data flow. The text is centered and uses a clean, sans-serif font. The word 'ZABBIX' is highlighted in a red box, while the rest of the text is white. The year ''26' is positioned to the right of the red box. The word 'CONFERENCE' is on a new line below, and 'LATIN AMERICA' is on a purple bar at the bottom.

ZABBIX '26

CONFERENCE

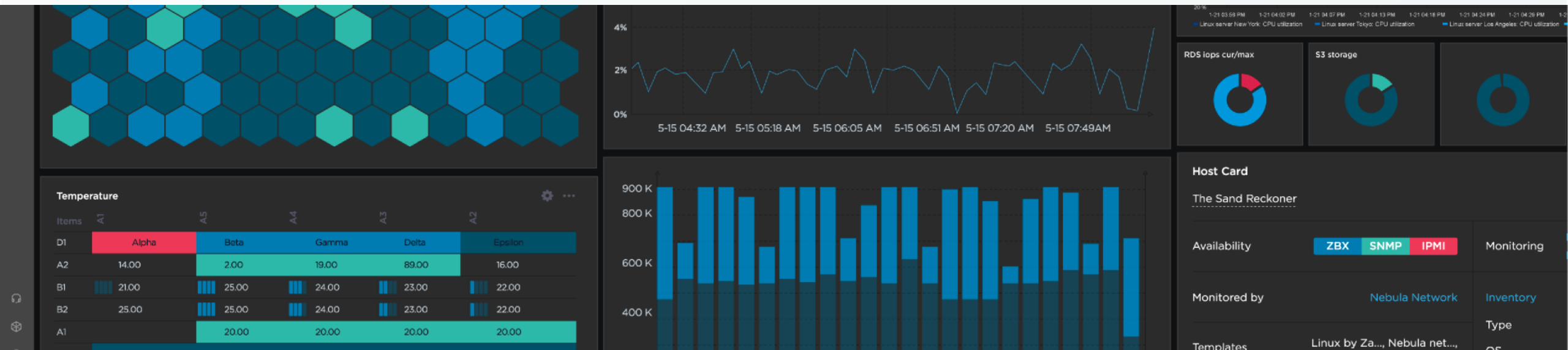
LATIN AMERICA

Nested LLD

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Technical Support Engineer & Trainer

O que é LLD

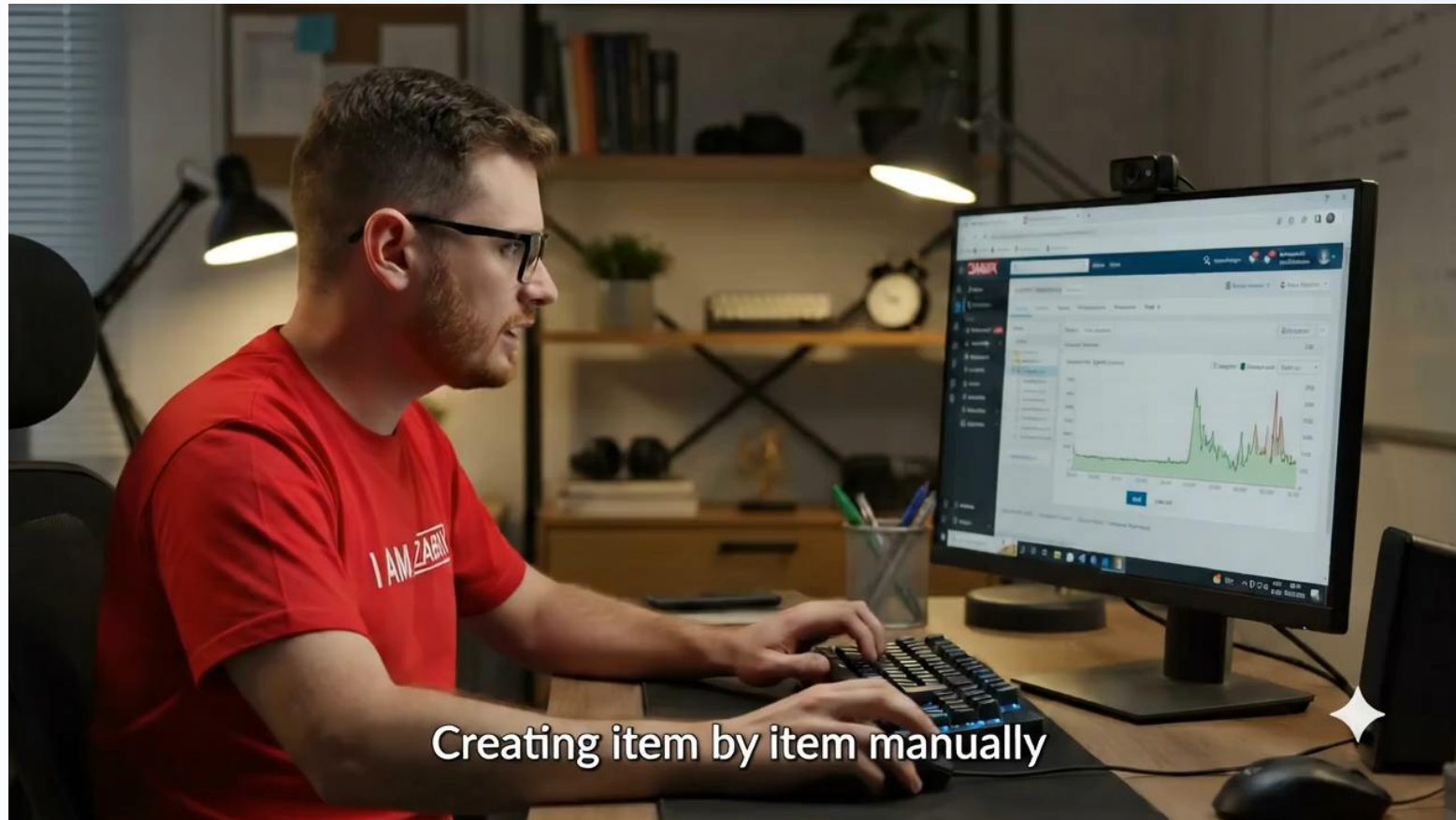


Low-level Discovery rule

Em resumo:

- ▶ Descoberta automática de recursos (entidades ou hosts)
- ▶ Geração dinâmica baseada em dados JSON
- ▶ Uso de macros de descoberta nos protótipos
- ▶ Disponível desde o Zabbix 2.0

Por que usar LLD



Por que usar LLD

Em resumo:

- ▶ Economiza tempo na criação de entidades
- ▶ Mantém padronização no monitoramento
- ▶ Reduz (e muito) o esforço operacional
- ▶ Facilita ambientes dinâmicos e escaláveis

Formato da LLD

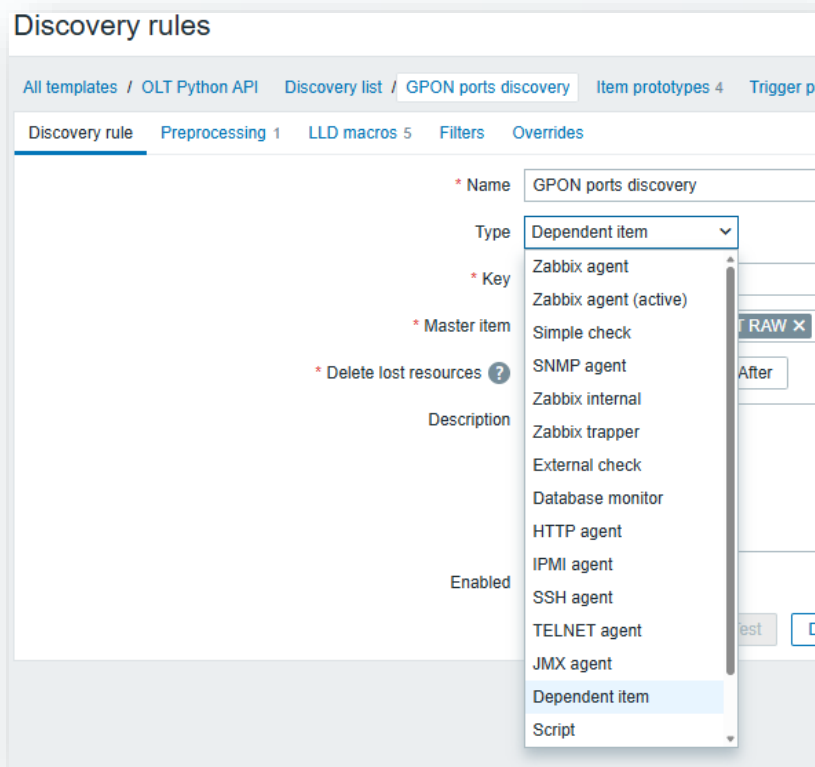
A regra de descoberta é responsável por ler um texto em JSON e através dele criar entidades através de protótipos.

- ▶ Itens
- ▶ Triggers
- ▶ Gráficos
- ▶ Hosts

<input type="checkbox"/> Host	Name ▲	Items	Triggers	Graphs	Hosts
<input type="checkbox"/>	Zabbix server Linux by Zabbix agent: Block devices discovery	Item prototypes 9	Trigger prototypes 1	Graph prototypes 3	Host prototypes
<input type="checkbox"/>	Zabbix server Zabbix server health: Zabbix stats cluster: High availability cluster node discovery	Item prototypes 5	Trigger prototypes 1	Graph prototypes	Host prototypes
<input type="checkbox"/>	Zabbix server Linux by Zabbix agent: Get filesystems: Mounted filesystem discovery	Item prototypes 7	Trigger prototypes 5	Graph prototypes 2	Host prototypes
<input type="checkbox"/>	Zabbix server Linux by Zabbix agent: Network interface discovery	Item prototypes 9	Trigger prototypes 4	Graph prototypes 1	Host prototypes
<input type="checkbox"/>	Zabbix server Zabbix server health: Zabbix proxies stats: Zabbix proxy discovery	Item prototypes 12	Trigger prototypes 4	Graph prototypes	Host prototypes
<input type="checkbox"/>	Zabbix server Zabbix server health: Zabbix proxy groups stats: Zabbix proxy groups discovery	Item prototypes 7	Trigger prototypes 6	Graph prototypes	Host prototypes

Formato da LLD

O tipo de coleta feito pela LLD é basicamente o mesmo de um item comum do Zabbix.



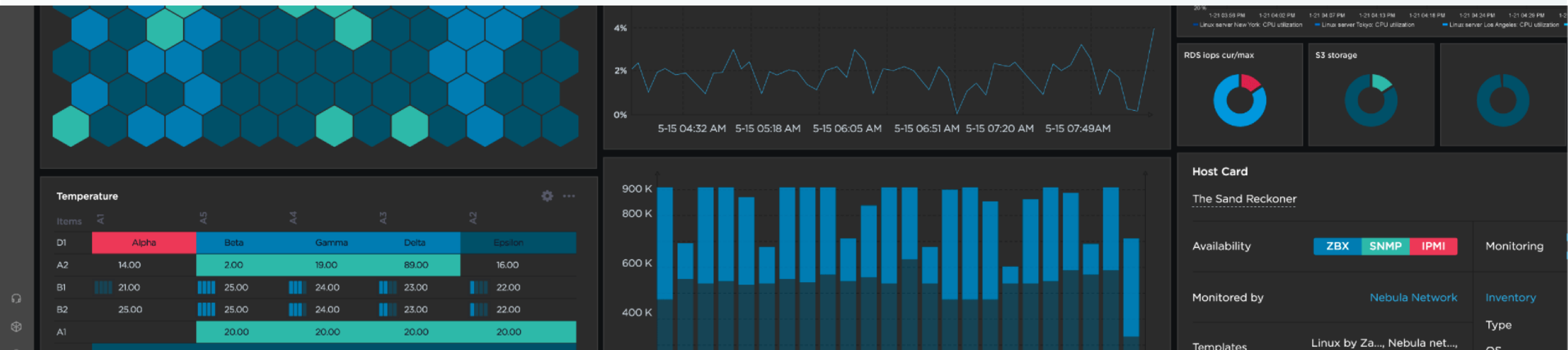
Key	Interval	Type
vfs.dev.discovery	1h	Zabbix agent
zabbix.nodes.discovery		Dependent item
vfs.fs.dependent.discovery		Dependent item
net.if.discovery	1h	Zabbix agent
zabbix.proxy.discovery		Dependent item
zabbix.proxy.groups.discovery		Dependent item

Desafios da LLD tradicional

- ▶ Descoberta em multinível
- ▶ Relação entre objetos descobertos
- ▶ Preservação do contexto entre níveis

Nested LLD (LLD aninhada)

O Zabbix 7.4 introduz uma nova maneira de descoberta.

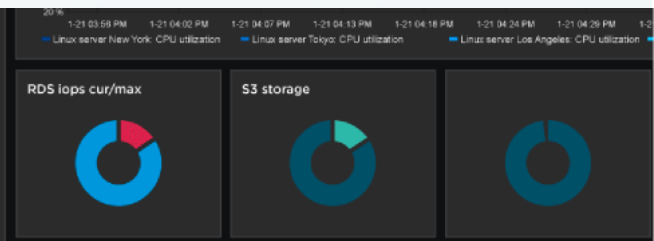


Nested LLD

Permite que criemos regras de descoberta dentro de outras regras de descoberta, assim:

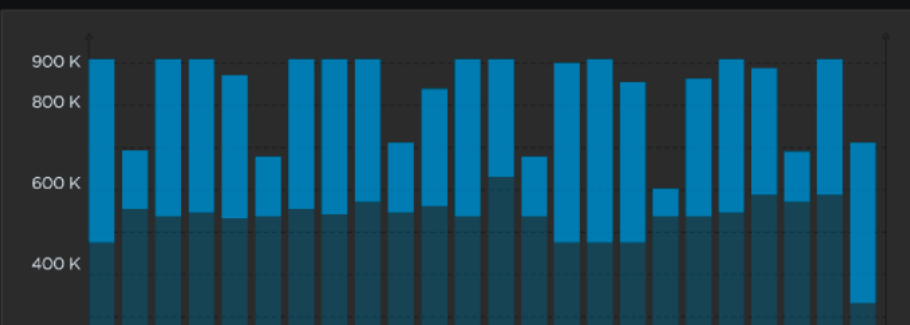
- ▶ Macros da regra principal (pai) são preservadas nos níveis filhos
- ▶ Cada nível pode ter seus próprios protótipos
- ▶ Permite descobrir entidades dependentes entre si
- ▶ Exemplo: OLT > GPON > ONU

Vamos ao cenário real?



Temperature

Items	A1	A5	A4	A3	A2
D1	Alpha	Beta	Gamma	Delta	Epsilon
A2	14.00	2.00	19.00	89.00	16.00
B1	21.00	25.00	24.00	23.00	22.00
B2	25.00	25.00	24.00	23.00	22.00
A1		20.00	20.00	20.00	20.00



Host Card

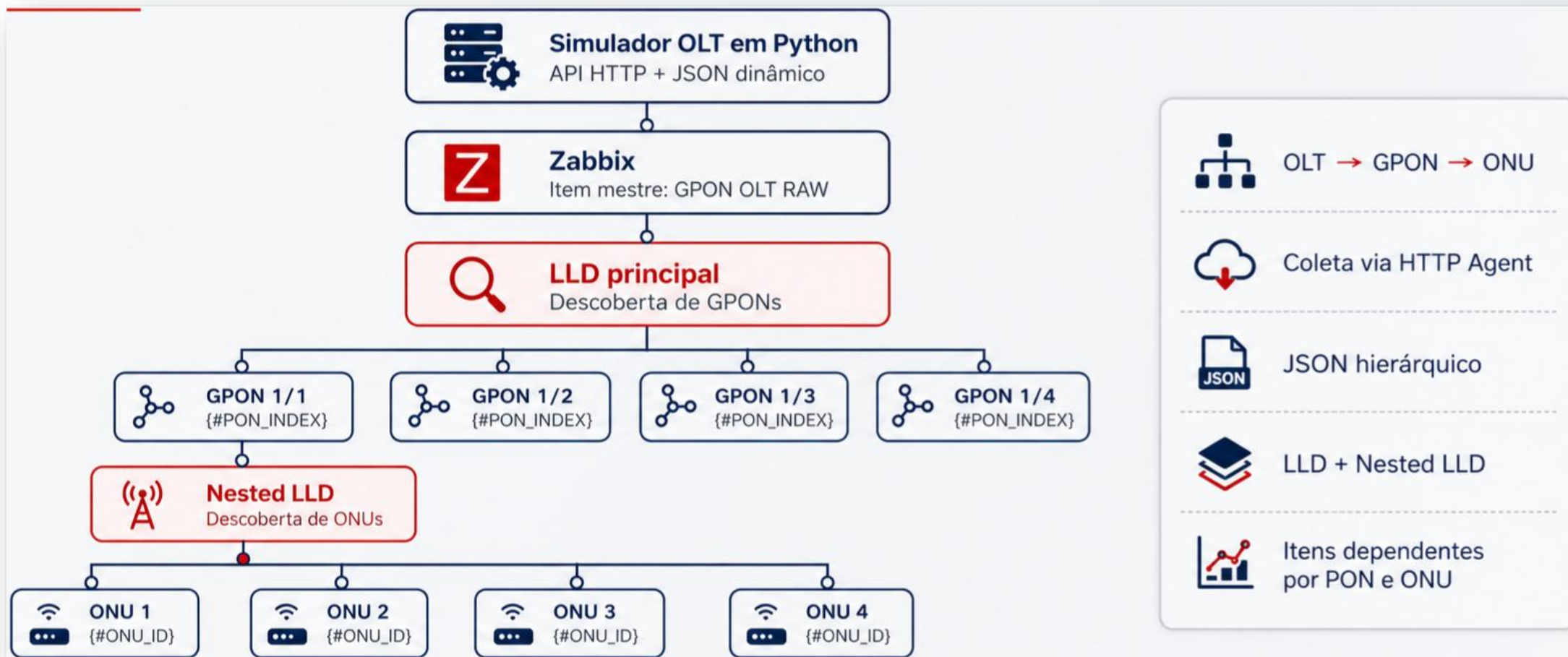
The Sand Reckoner

Availability: ZBX, SNMP, IPMI, Monitoring

Monitored by: Nebula Network, Inventory

Templates: Linux by Za..., Nebula net..., OS

Arquitetura do Lab



Ambiente do Lab

Um script python é responsável por simular uma OLT completa e publicá-la via API.

O script atualiza os valores de estado, potências de transmissão, ONUs online e offline a intervalos irregulares, criando um cenário próximo ao real.

```
[root@OL10-LAB ~]#  
[root@OL10-LAB ~]#  
[root@OL10-LAB ~]# curl -s http://127.0.0.1:8000/api/v1/olt/OLT-LAB-01/snapshot | jq  
{  
  "olt": {  
    "olt_id": "OLT-LAB-01",  
    "vendor": "Zabbix GPON Simulator",  
    "model": "ZBX-GPON-8P-LAB",  
    "firmware": "7.4-lab",  
    "management_ip": "192.168.100.10",  
    "location": "Lab Zabbix Conference 2026",  
    "status": "online",  
    "created_at": "2026-05-18T20:27:27.322074+00:00",  
    "last_update": "2026-05-25T01:57:18.171983+00:00",  
    "boot_time_epoch": 1778630418,  
    "uptime_seconds": 1043820,  
    "gpon_ports_total": 8,  
    "onus_total": 92,  
    "onus_online": 57,  
    "onus_offline": 35,  
    "simulation": {  
      "last_event_pon": "1-7",  
      "last_event_epoch": 1779674238,  
      "event_counter": 7066  
    }  
  },  
  "gpon_ports": [  
    {  
      "slot": 1,  
      "pon": 1,  
      "pon_index": "1-1",  
      "pon_name": "gpon-onu_1-1",  
      "pon_alias": "GPON 1-1",  
      "admin_status": "enabled",  
      "oper_status": "up",  
      "event": {  
        "event_id": "AUTO-EVENT-007064",  
        "type": "automatic_onu_offline",  
        "reason": "Power Off",  
        "affected_onus": 2,  
        "created_at": "2026-05-25T01:56:16.743546+00:00"  
      }  
    },  
    {  
      "next_event_epoch": 1779674319,  
      "last_event_epoch": 1779674176,  
      "onus_total": 24,  
      "onus_online": 18,  
      "onus_offline": 6  
    }  
  ]  
}
```

Cenário no Zabbix

Em nosso cenário temos dois templates:

Templates

Template groups Select Tags [Add](#)

Linked templates Select

Name

Vendor

Version

<input type="checkbox"/> Name ▲	Hosts	Items	Triggers	Graphs	Dashboards	Discovery
<input type="checkbox"/> OLT Nested GPON	Hosts 8	Items 1	Triggers	Graphs	Dashboards	Discovery 2
<input type="checkbox"/> OLT Python API	Hosts 1	Items 7	Triggers	Graphs	Dashboards	Discovery 1

Cenário no Zabbix

O template OLT Python API é o responsável por se conectar à API e coletar os dados da OLT, GPONs e ONUs.

Tudo é feito através de dependências, minimizando conexões.

The screenshot displays the Zabbix web interface for configuring an item. The left pane shows the 'Items' list with a subfilter for 'OLT Python API'. The right pane shows the configuration for the item 'GPON OLT RAW'.

Item Configuration:

- Name: GPON OLT RAW
- Type: HTTP agent
- Key: gpon.olt.raw
- Type of information: Text
- URL: `{$GPON.API.SCHEME}://{ $GPON.API.HOST }:{ $GPON.API.PORT }/api/v1/olt/{ $GPON.OLT.ID }`
- Request type: GET
- Request body type: Raw data
- Required status codes: 200
- Follow redirects:
- Retrieve mode: Body
- Convert to JSON:
- HTTP proxy: `[protocol]://[user[:password]@]proxy.example.com[:port]`
- HTTP authentication: None
- SSL verify peer:

Item List (Left Pane):

Name
GPON OLT RAW
GPON OLT RAW: OLT GPON ports total
GPON OLT RAW: OLT ONUs offline
GPON OLT RAW: OLT ONUs online
GPON OLT RAW: OLT ONUs total
GPON OLT RAW: OLT Status
GPON OLT RAW: OLT uptime

Cenário no Zabbix

Através de uma regra LLD tradicional o Zabbix descobre todas as PONs e cria os itens com a quantidade de ONUs online, offline, total e estado de cada porta.

The screenshot shows the Zabbix web interface. The top part displays the 'Discovery rules' configuration page. It includes a breadcrumb trail: 'All templates / OLT Python API / Items 7 / Triggers / Graphs / Dashboards / Discovery rules 1 / Web scenarios'. There are search fields for 'Template groups' and 'Templates', with 'OLT Python API' selected in the latter. A 'Type' dropdown is set to 'All', and an 'Update interval' field is empty. At the bottom right, there are buttons for 'Delete lost resources' and a radio button group for 'All', 'Never', 'Immediately', and 'After', with 'All' selected.

The bottom part of the screenshot shows the 'Item prototypes' configuration page. It has a breadcrumb trail: 'All templates / OLT Python API / Discovery list / GPON ports discovery / Item prototypes 4 / Trigger prototypes 2 / Graph prototypes / Host prototypes 1 / Discovery prototypes 1'. Below this is a table with the following columns: Name, Key, Interval, History, Trends, and Type.

<input type="checkbox"/>	Name ▲	Key	Interval	History	Trends	Type
<input type="checkbox"/>	... GPON OLT RAW: GPON {#PON_INDEX}: ONUs offline	gpon.port.onus_offline{#{#PON_INDEX}}	31d	365d		Dependent item
<input type="checkbox"/>	... GPON OLT RAW: GPON {#PON_INDEX}: ONUs online	gpon.port.onus_online{#{#PON_INDEX}}	31d	365d		Dependent item
<input type="checkbox"/>	... GPON OLT RAW: GPON {#PON_INDEX}: ONUs total	gpon.port.onus_total{#{#PON_INDEX}}	31d	365d		Dependent item
<input type="checkbox"/>	... GPON OLT RAW: GPON {#PON_INDEX}: Operational status	gpon.port.oper_status{#{#PON_INDEX}}	31d	0		Dependent item

Cenário no Zabbix

Regra de descoberta principal

Discovery rules

All templates / OLT Python API / Discovery list / GPON ports discovery / Item prototypes 4 / Trigger prototypes 2 / Graph prototypes / Host prototypes 1

Discovery rule / Preprocessing 1 / LLD macros 5 / Filters / Overrides

Discovery rules

* Name: GPON ports discovery

Type: Dependent item

* Key: gpon.ports.discovery

* Master item: OLT Python API: GPON

* Delete lost resources: Never Immediately

Description:

Enabled:

[Update](#) [Clone](#)

All templates / OLT Python API / Discovery list / GPON ports discovery / Item prototypes 4 / Trigger prototypes 2 / Graph prototypes / Host prototypes 1 / Discovery prototypes 1

Discovery rule / Preprocessing 1 / LLD macros 5 / Filters / Overrides

LLD macros

LLD macro	JSONPath	
{#PON_ALIAS}	\$.pon_alias	Remove
{#PON_ID}	\$.pon	Remove
{#PON_INDEX}	\$.pon_index	Remove
{#PON_NAME}	\$.pon_name	Remove
{#SLOT}	\$.slot	Remove

[Add](#)

[Update](#) [Clone](#) [Test](#) [Delete](#) [Cancel](#)

Cenário no Zabbix

Protótipos da LLD principal

Item prototypes

All templates / OLT Python API / Discovery list / GPON ports discovery / **Item prototypes 4** / Trigger prototypes 2 / Graph prototypes / Host prototypes 1 / Discovery prototypes 1

<input type="checkbox"/>	Name ▲	Key	Interval	History	Trends	Type
<input type="checkbox"/>	... GPON OLT RAW: GPON {#PON_INDEX}: ONUs offline	gpon.port.onus_offline[{#PON_INDEX}]		31d	365d	Dependent item
<input type="checkbox"/>	... GPON OLT RAW: GPON {#PON_INDEX}: ONUs online	gpon.port.onus_online[{#PON_INDEX}]		31d	365d	Dependent item
<input type="checkbox"/>	... GPON OLT RAW: GPON {#PON_INDEX}: ONUs total	gpon.port.onus_total[{#PON_INDEX}]		31d	365d	Dependent item
<input type="checkbox"/>	... GPON OLT RAW: GPON {#PON_INDEX}: Operational status	gpon.port.oper_status[{#PON_INDEX}]		31d	0	Dependent item

Host prototypes

All templates / OLT Python API / Discovery list / GPON ports discovery / Item prototypes 4 / Trigger prototypes 2 / Graph prototypes / **Host prototypes 1** / Discovery prototypes 1

<input type="checkbox"/>	Name ▲	Templates	Create enabled
<input type="checkbox"/>	OLT GPON {#PON_INDEX}	OLT Nested GPON	Yes

Cenário no Zabbix

Resultado da descoberta das PONs:

<input type="checkbox"/>	Name ▲	Triggers	Key
<input type="checkbox"/>	*** GPON ports discovery: GPON OLT RAW: GPON 1-1: ONUs offline	Triggers 1	gpon.port.onus_offline[1-1]
<input type="checkbox"/>	*** GPON ports discovery: GPON OLT RAW: GPON 1-1: ONUs online		gpon.port.onus_online[1-1]
<input type="checkbox"/>	*** GPON ports discovery: GPON OLT RAW: GPON 1-1: ONUs total		gpon.port.onus_total[1-1]
<input type="checkbox"/>	*** GPON ports discovery: GPON OLT RAW: GPON 1-1: Operational status	Triggers 1	gpon.port.oper_status[1-1]

<input type="checkbox"/>	Host	Name ▲	Interval	History	Trends	Type	Last check	Last value	Change	Key
<input type="checkbox"/>	OLT-API	GPON 1-1: ONUs offline gpon.port.onus_offline[1-1]		31d	365d	Dependent item	7s	7	+3	gpon.port.onus_offline[1-2]
<input type="checkbox"/>	OLT-API	GPON 1-1: ONUs online gpon.port.onus_online[1-1]		31d	365d	Dependent item	7s	17	-3	gpon.port.onus_online[1-2]
<input type="checkbox"/>	OLT-API	GPON 1-1: ONUs total gpon.port.onus_total[1-1]		31d	365d	Dependent item	7s	24		gpon.port.onus_total[1-2]
<input type="checkbox"/>	OLT-API	GPON 1-1: Operational status gpon.port.oper_status[1-1]		31d	0	Dependent item	7s	Degraded (2)	+1	gpon.port.oper_status[1-2]
<input type="checkbox"/>	OLT-API	GPON 1-2: ONUs offline gpon.port.onus_offline[1-2]		31d	365d	Dependent item	7s	4		gpon.port.onus_offline[1-3]
<input type="checkbox"/>	OLT-API	GPON 1-2: ONUs online gpon.port.onus_online[1-2]		31d	365d	Dependent item	7s	0		gpon.port.onus_online[1-3]
<input type="checkbox"/>	OLT-API	GPON 1-2: ONUs total gpon.port.onus_total[1-2]		31d	365d	Dependent item	7s	4		gpon.port.onus_total[1-3]
<input type="checkbox"/>	OLT-API	GPON 1-2: Operational status gpon.port.oper_status[1-2]		31d	0	Dependent item	7s	Degraded (2)		gpon.port.oper_status[1-3]
<input type="checkbox"/>	OLT-API	GPON 1-3: ONUs offline gpon.port.onus_offline[1-3]		31d	365d	Dependent item	7s	4	-1	gpon.port.onus_offline[1-4]
<input type="checkbox"/>	OLT-API	GPON 1-3: ONUs online gpon.port.onus_online[1-3]		31d	365d	Dependent item	7s	4	+1	gpon.port.onus_online[1-4]
<input type="checkbox"/>	OLT-API	GPON 1-3: ONUs total gpon.port.onus_total[1-3]		31d	365d	Dependent item	7s	8		gpon.port.onus_total[1-4]
<input type="checkbox"/>	OLT-API	GPON 1-3: Operational status gpon.port.oper_status[1-3]		31d	0	Dependent item	7s	Degraded (2)		gpon.port.oper_status[1-4]
<input type="checkbox"/>	OLT-API	GPON 1-4: ONUs offline gpon.port.onus_offline[1-4]		31d	365d	Dependent item	7s	3	-2	
<input type="checkbox"/>	OLT-API	GPON 1-4: ONUs online gpon.port.onus_online[1-4]		31d	365d	Dependent item	7s	9	+2	

Cenário no Zabbix

A LLD nested é responsável por descobrir e criar itens para cada ONU dentro das GPONs

Discovery prototypes

All templates / OLT Python API / Discovery list / GPON ports discovery / Item prototypes 4 / Trigger prototypes 2 / Graph prototypes / Host prototypes 1 / Discovery prototypes 1

Discovery prototype / Preprocessing 1 / LLD macros 5 / Filters / Overrides

* Name

Type

* Key

* Delete lost resources ?

Description

Create enabled

Discover

Cenário no Zabbix

Configuração da nova nested LLD

Discovery prototypes

All templates / OLT Python API / Discovery list / GPON ports discovery / Item prototypes 4 / Trigger prototypes 2 / Graph prototypes / Host prototypes 1 / Discovery prototypes 1

Discovery prototype / Preprocessing 1 / LLD macros 5 / Filters / Overrides

Preprocessing steps

Name	Parameters
1: JSONPath	\$.onus

Add

Update Clone Test Delete Cancel

Discovery prototypes

All templates / OLT Python API / Discovery list / GPON ports discovery / Item prototypes 4 / Trigger prototypes 2 / Graph prototypes / Host prototypes 1 / Discovery prototypes 1

Discovery prototype / Preprocessing 1 / LLD macros 5 / Filters / Overrides

LLD macros

LLD macro	JSONPath	
{#CUSTOMER_ID}	\$.customer_id	Remove
{#ONU_ID}	\$.onu_id	Remove
{#ONU_MODEL}	\$.onu_model	Remove
{#ONU_NAME}	\$.onu_name	Remove
{#ONU_SERIAL}	\$.onu_serial	Remove

Add

Update Clone Test Delete Cancel

Cenário no Zabbix

Protótipos de item da nested LLD

Item prototypes ? [Create item prototype](#)

[All templates](#) / [OLT Python API](#) / [Discovery list](#) / [***](#) / [ONU discovery on GPON \(#PON_I...](#) / **Item prototypes 9** / [Trigger prototypes](#) / [Graph prototypes](#) / [Host prototypes](#) / [Discovery prototypes](#)

<input type="checkbox"/>	Name ▲	Key	Interval	History	Trends	Type	Create enabled	Discover	Tags
<input type="checkbox"/>	*** GPON OLT RAW: {#ONU_NAME}: Distance	gpon.onu.distance[{#PON_INDEX},{#ONU_ID}]		31d	365d	Dependent item	Yes	Yes	<code>component: onu</code> <code>data-type: distance</code> <code>onu_id: {#ONU_ID}</code> ...
<input type="checkbox"/>	*** GPON OLT RAW: {#ONU_NAME}: Last offline reason	gpon.onu.last.off[{#PON_INDEX},{#ONU_ID}]		31d		Dependent item	Yes	Yes	<code>component: onu</code> <code>data-type: last_offline</code> <code>onu_id: {#ONU_ID}</code> ...
<input type="checkbox"/>	*** GPON OLT RAW: {#ONU_NAME}: OLT RX power	gpon.onu.olt.rx.pw[{#PON_INDEX},{#ONU_ID}]		31d	365d	Dependent item	Yes	Yes	<code>component: onu</code> <code>data-type: olt_rx_power</code> <code>onu_id: {#ONU_ID}</code> ...
<input type="checkbox"/>	*** GPON OLT RAW: {#ONU_NAME}: RX power	gpon.onu.rx.pw[{#PON_INDEX},{#ONU_ID}]		31d	365d	Dependent item	Yes	Yes	<code>component: onu</code> <code>data-type: rx_power</code> <code>onu_id: {#ONU_ID}</code> ...
<input type="checkbox"/>	*** GPON OLT RAW: {#ONU_NAME}: Serial number	gpon.onu.serial[{#PON_INDEX},{#ONU_ID}]		31d		Dependent item	Yes	Yes	<code>component: onu</code> <code>data-type: serial_number</code> <code>onu_id: {#ONU_ID}</code> ...
<input type="checkbox"/>	*** GPON OLT RAW: {#ONU_NAME}: Status	gpon.onu.status[{#PON_INDEX},{#ONU_ID}]		31d		Dependent item	Yes	Yes	<code>component: onu</code> <code>data-type:</code> <code>onu_id: {#ONU_ID}</code> ...
<input type="checkbox"/>	*** GPON OLT RAW: {#ONU_NAME}: Temperature	gpon.onu.temp[{#PON_INDEX},{#ONU_ID}]		31d	365d	Dependent item	Yes	Yes	<code>component: onu</code> <code>data-type: temperature</code> <code>onu_id: {#ONU_ID}</code> ...
<input type="checkbox"/>	*** GPON OLT RAW: {#ONU_NAME}: TX power	gpon.onu.tx.pw[{#PON_INDEX},{#ONU_ID}]		31d	365d	Dependent item	Yes	Yes	<code>component: onu</code> <code>data-type: tx_power</code> <code>onu_id: {#ONU_ID}</code> ...
<input type="checkbox"/>	*** GPON OLT RAW: {#ONU_NAME}: Uptime	gpon.onu.uptime[{#PON_INDEX},{#ONU_ID}]		31d	365d	Dependent item	Yes	Yes	<code>component: onu</code> <code>data-type: uptime</code> <code>onu_id: {#ONU_ID}</code> ...

Displaying 9 of 9 found

Cenário no Zabbix

Protótipos de descoberta criados no host

Discovery rules

All hosts / OLT-API Enabled Items 939 Triggers 16 Graphs Discovery rules 9 Web scenarios

Host	Name	Items	Triggers	Graphs	Hosts	Discovery rules	Key	Interval	Type	Status	Info
OLT-API	OLT Python API: GPON OLT RAW: GPON ports discovery	Item prototypes 4	Trigger prototypes 2	Graph prototypes	Host prototypes 1	Discovery prototypes 1	gpon.ports.discovery		Dependent item	Enabled	
OLT-API	GPON ports discovery: ONU discovery on GPON 1-1	Item prototypes 9	Trigger prototypes	Graph prototypes	Host prototypes	Discovery prototypes	gpon.onu.discovery[1-1]		Nested	Enabled	
OLT-API	GPON ports discovery: ONU discovery on GPON 1-2	Item prototypes 9	Trigger prototypes	Graph prototypes	Host prototypes	Discovery prototypes	gpon.onu.discovery[1-2]		Nested	Enabled	
OLT-API	GPON ports discovery: ONU discovery on GPON 1-3	Item prototypes 9	Trigger prototypes	Graph prototypes	Host prototypes	Discovery prototypes	gpon.onu.discovery[1-3]		Nested	Enabled	
OLT-API	GPON ports discovery: ONU discovery on GPON 1-4	Item prototypes 9	Trigger prototypes	Graph prototypes	Host prototypes	Discovery prototypes	gpon.onu.discovery[1-4]		Nested	Enabled	

Item prototypes

All templates / OLT Python API Discovery list / ... / ONU discovery on GPON {#PON_ID}... Item prototypes 9 Trigger prototypes Graph prototypes Host prototypes Discovery prototypes

Name	Key	Interval	History	Trends	Type	Create enabled	Discover	Tags
GPON OLT RAW: {#ONU_NAME}: Distance	gpon.onu.distance[{#PON_INDEX},{#ONU_ID}]	31d	365d		Dependent item	Yes	Yes	component: onu data-type: distance onu_id: {#ONU_ID} ...
GPON OLT RAW: {#ONU_NAME}: Last offline reason	gpon.onu.last.off[{#PON_INDEX},{#ONU_ID}]	31d			Dependent item	Yes	Yes	component: onu data-type: last_offline onu_id: {#ONU_ID} ...
GPON OLT RAW: {#ONU_NAME}: OLT RX power	gpon.onu.ol.rx.pw[{#PON_INDEX},{#ONU_ID}]							
GPON OLT RAW: {#ONU_NAME}: RX power	gpon.onu.rx.pw[{#PON_INDEX},{#ONU_ID}]							
GPON OLT RAW: {#ONU_NAME}: Serial number	gpon.onu.serial[{#PON_INDEX},{#ONU_ID}]							
GPON OLT RAW: {#ONU_NAME}: Status	gpon.onu.status[{#PON_INDEX},{#ONU_ID}]							
GPON OLT RAW: {#ONU_NAME}: Temperature	gpon.onu.temp[{#PON_INDEX},{#ONU_ID}]							
GPON OLT RAW: {#ONU_NAME}: TX power	gpon.onu.tx.pw[{#PON_INDEX},{#ONU_ID}]							
GPON OLT RAW: {#ONU_NAME}: Uptime	gpon.onu.uptime[{#PON_INDEX},{#ONU_ID}]							

Item prototype

Item prototype Tags 5 Preprocessing 1

Preprocessing steps 1

Name	Parameters	Custom on fail	Actions
1: JSONPath	<code>\$.gpon_ports[?(@.pon_index == "{#PON_INDEX}")].onus[?(@</code>	Discard value	Test Remove

Type of information: Numeric (float)

Update Clone Test Delete Cancel

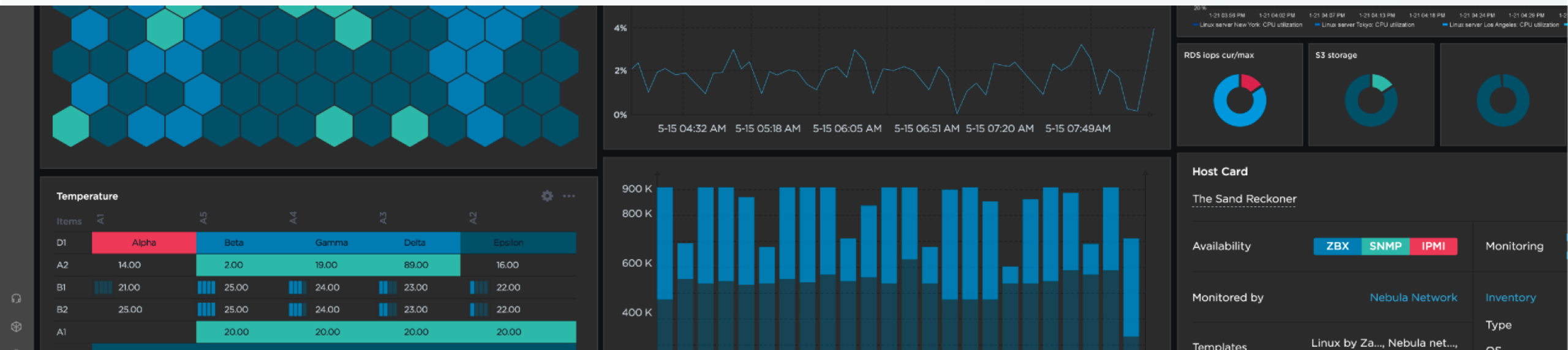
Cenário no Zabbix

Itens criados no host

<input type="checkbox"/>	***	GPON ports discovery: GPON OLT RAW: GPON 1-8: ONUs online		gpon.port.onus_online[1-8]	31d	365d	Dependent item	Enabled	component: gpon data-type: onus_online pon: 1-8
<input type="checkbox"/>	***	GPON ports discovery: GPON OLT RAW: GPON 1-8: ONUs total		gpon.port.onus_total[1-8]	31d	365d	Dependent item	Enabled	component: gpon data-type: onus_total pon: 1-8
<input type="checkbox"/>	***	GPON ports discovery: GPON OLT RAW: GPON 1-8: Operational status	Triggers 1	gpon.port.oper_status[1-8]	31d	0	Dependent item	Enabled	component: gpon data-type: operational_status pon: 1-8
<input type="checkbox"/>	***	OLT Python API: GPON OLT RAW		gpon.olt.raw	15s	0	HTTP agent	Enabled	scope: OLT
<input type="checkbox"/>	***	OLT Python API: GPON OLT RAW: OLT GPON ports total		gpon.olt.gpon_ports_total	31d	365d	Dependent item	Enabled	scope: OLT
<input type="checkbox"/>	***	OLT Python API: GPON OLT RAW: OLT ONUs offline		gpon.olt.onus_offline	31d	365d	Dependent item	Enabled	scope: OLT
<input type="checkbox"/>	***	OLT Python API: GPON OLT RAW: OLT ONUs online		gpon.olt.onus_online	31d	365d	Dependent item	Enabled	scope: OLT
<input type="checkbox"/>	***	OLT Python API: GPON OLT RAW: OLT ONUs total		gpon.olt.onus_total	31d	365d	Dependent item	Enabled	scope: OLT
<input type="checkbox"/>	***	OLT Python API: GPON OLT RAW: OLT Status		olt.status	31d	0	Dependent item	Enabled	scope: OLT
<input type="checkbox"/>	***	OLT Python API: GPON OLT RAW: OLT uptime		gpon.olt.uptime	31d	365d	Dependent item	Enabled	scope: OLT
<input type="checkbox"/>	***	ONU discovery on GPON 1-1: GPON OLT RAW: ONU-1-1-001: Distance		gpon.onu.distance[1-1,1]	31d	365d	Dependent item	Enabled	component: onu data-type: distance onu_id: 1 ***
<input type="checkbox"/>	***	ONU discovery on GPON 1-1: GPON OLT RAW: ONU-1-1-001: Last offline reason		gpon.onu.last.off[1-1,1]	31d		Dependent item	Enabled	component: onu data-type: last_offline onu_id: 1 ***
<input type="checkbox"/>	***	ONU discovery on GPON 1-1: GPON OLT RAW: ONU-1-1-001: OLT RX power		gpon.onu.olt.rx.pw[1-1,1]	31d	365d	Dependent item	Enabled	component: onu data-type: olt_rx_power onu_id: 1 ***
<input type="checkbox"/>	***	ONU discovery on GPON 1-1: GPON OLT RAW: ONU-1-1-001: RX power		gpon.onu.rx.pw[1-1,1]	31d	365d	Dependent item	Enabled	component: onu data-type: rx_power onu_id: 1 ***
<input type="checkbox"/>	***	ONU discovery on GPON 1-1: GPON OLT RAW: ONU-1-1-001: Serial number		gpon.onu.serial[1-1,1]	31d		Dependent item	Enabled	component: onu data-type: serial_number onu_id: 1 ***
<input type="checkbox"/>	***	ONU discovery on GPON 1-1: GPON OLT RAW: ONU-1-1-001: Status		gpon.onu.status[1-1,1]	31d		Dependent item	Enabled	component: onu data-type onu_id: 1 ***
<input type="checkbox"/>	***	ONU discovery on GPON 1-1: GPON OLT RAW: ONU-1-1-001: Temperature		gpon.onu.temp[1-1,1]	31d	365d	Dependent item	Enabled	component: onu data-type: temperature onu_id: 1 ***
<input type="checkbox"/>	***	ONU discovery on GPON 1-1: GPON OLT RAW: ONU-1-1-001: TX power		gpon.onu.tx.pw[1-1,1]	31d	365d	Dependent item	Enabled	component: onu data-type: tx_power onu_id: 1 ***
<input type="checkbox"/>	***	ONU discovery on GPON 1-1: GPON OLT RAW: ONU-1-1-001: Uptime		gpon.onu.uptime[1-1,1]	31d	365d	Dependent item	Enabled	component: onu data-type: uptime onu_id: 1 ***
<input type="checkbox"/>	***	ONU discovery on GPON 1-1: GPON OLT RAW: ONU-1-1-002: Distance		gpon.onu.distance[1-1,2]	31d	365d	Dependent item	Enabled	component: onu data-type: distance onu_id: 2 ***
<input type="checkbox"/>	***	ONU discovery on GPON 1-1: GPON OLT RAW: ONU-1-1-002: Last offline reason		gpon.onu.last.off[1-1,2]	31d		Dependent item	Enabled	component: onu data-type: last_offline onu_id: 2 ***

Segundo cenário

Usando a regra de LLD principal com protótipo de host



Cenário no Zabbix

Host prototypes

All templates / OLT Python API / Discovery list / GPON ports discovery / Item prototypes 4 / Trigger prototypes 2 / Graph prototypes / Host prototypes 1

Host Tags 1 Macros Inventory Encryption

* Host name

Visible name

Templates	Name	Action
	OLT Nested GPON	Unlink

* Host groups

Group prototypes

[Add](#)

Interfaces

Create enabled

Discover

[Update](#)

All templates / OLT Nested GPON / Discovery list / GPON Discovery / Item prototypes 4 / Trigger prototypes / Graph prototypes / Host prototypes / Discovery prototypes

Discovery rule Preprocessing 1 LLD macros Filters Overrides

* Name

Type

* Key

* Delete lost resources ?

Description

Discovery rules

All templates / OLT Nested GPON / Items 1 / Triggers / Graphs / Dashboards / Discovery rules 2 / Web scenarios

Template groups [Select](#)

Templates [Select](#)

Name

Key

Type

Update interval

Delete lost resources

Disable lost resources

Status

[Apply](#) [Reset](#)

<input type="checkbox"/>	Template	Name	Items	Triggers	Graphs	Hosts	Discovery rules	Key	Interval	Type	Status
<input type="checkbox"/>	OLT Nested GPON	GPON Discovery	Item prototypes 4	Trigger prototypes	Graph prototypes	Host prototypes	Discovery prototypes	gpon.discovery		Nested	Enabled
<input type="checkbox"/>	OLT Nested GPON	ONU Discovery	Item prototypes 9	Trigger prototypes	Graph prototypes	Host prototypes	Discovery prototypes	onu.discovery		Nested	Enabled

Displaying 2 of 2 found

Cenário no Zabbix

Hosts criados a partir dos protótipos

Hosts ? Host Wizard Create host Import

[Filter](#)

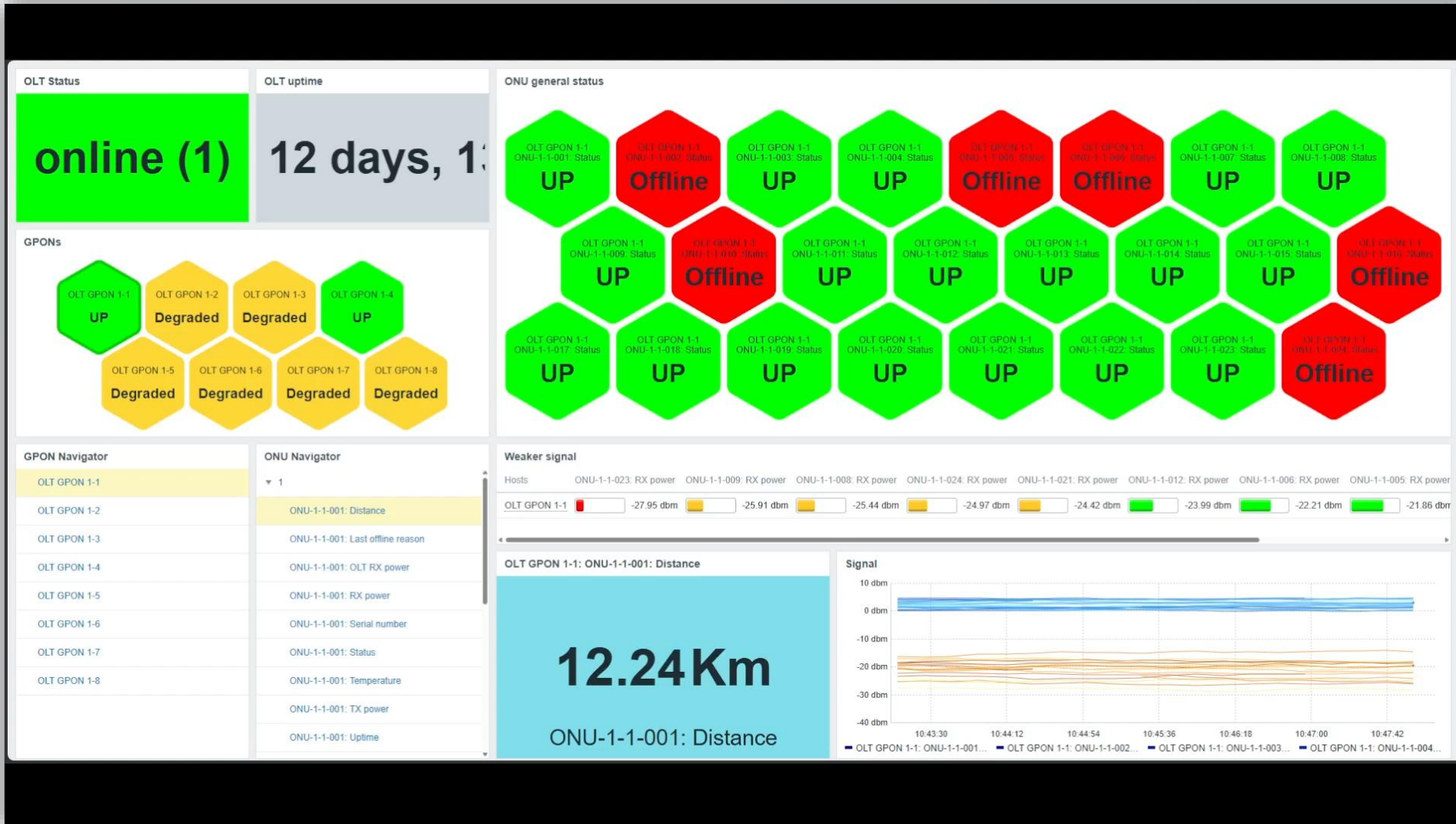
<input type="checkbox"/>	Name ▲	Items	Triggers	Graphs	Discovery	Web	Interface	Proxy	Templates	Status	Availability	Agent encryption	Info	Tags
<input type="checkbox"/>	... OLT-API	Items 939	Triggers 16	Graphs	Discovery 9	Web			OLT Python API	Enabled		None		device: OLT
<input type="checkbox"/>	... GPON ports discovery: OLT GPON 1-1	Items 113	Triggers	Graphs	Discovery 2	Web			OLT Nested GPON	Enabled		None		component: GPON
<input type="checkbox"/>	... GPON ports discovery: OLT GPON 1-2	Items 185	Triggers	Graphs	Discovery 2	Web			OLT Nested GPON	Enabled		None		component: GPON
<input type="checkbox"/>	... GPON ports discovery: OLT GPON 1-3	Items 59	Triggers	Graphs	Discovery 2	Web			OLT Nested GPON	Enabled		None		component: GPON
<input type="checkbox"/>	... GPON ports discovery: OLT GPON 1-4	Items 95	Triggers	Graphs	Discovery 2	Web			OLT Nested GPON	Enabled		None		component: GPON
<input type="checkbox"/>	... GPON ports discovery: OLT GPON 1-5	Items 149	Triggers	Graphs	Discovery 2	Web			OLT Nested GPON	Enabled		None		component: GPON
<input type="checkbox"/>	... GPON ports discovery: OLT GPON 1-6	Items 185	Triggers	Graphs	Discovery 2	Web			OLT Nested GPON	Enabled		None		component: GPON
<input type="checkbox"/>	... GPON ports discovery: OLT GPON 1-7	Items 41	Triggers	Graphs	Discovery 2	Web			OLT Nested GPON	Enabled		None		component: GPON
<input type="checkbox"/>	... GPON ports discovery: OLT GPON 1-8	Items 113	Triggers	Graphs	Discovery 2	Web			OLT Nested GPON	Enabled		None		component: GPON

Cenário no Zabbix

Latest data dos itens dos protótipos de host

<input type="checkbox"/> Host	Name ▲	Interval	History	Trends	Type	Last check	Last value	Change	Tags
<input type="checkbox"/> OLT GPON 1-6	GPON 1-6: ONUs offline gpon.port.onus_offline[1-6]		31d	365d	Dependent item	0	3		
<input type="checkbox"/> OLT GPON 1-6	GPON 1-6: ONUs online gpon.port.onus_online[1-6]		31d	365d	Dependent item	0	17		
<input type="checkbox"/> OLT GPON 1-6	GPON 1-6: ONUs total gpon.port.onus_total[1-6]		31d	365d	Dependent item	0	20		
<input type="checkbox"/> OLT GPON 1-6	GPON 1-6: Operational status gpon.port.oper_status[1-6]		31d	365d	Dependent item	0	Up (1)		
<input type="checkbox"/> OLT GPON 1-6	GPON OLT RAW gpon.olt.raw	15s	0		HTTP agent				component: olt data-type: raw
<input type="checkbox"/> OLT GPON 1-6	ONU-1-6-001: Distance gpon.onu.distance[1-6,1]		7d	365d	Dependent item	0	2.23 Km		component: onu data-type: distance onu_id: 1 ***
<input type="checkbox"/> OLT GPON 1-6	ONU-1-6-001: Last offline reason gpon.onu.last.off[1-6,1]		7d		Dependent item	0	null		component: onu data-type: last_offline onu_id: 1 ***
<input type="checkbox"/> OLT GPON 1-6	ONU-1-6-001: OLT RX power gpon.onu.olt.rx.pw[1-6,1]		7d	365d	Dependent item	0	-16.04 dbm	+0.56 dbm	component: onu data-type: olt_rx_pwr onu_id: 1 ***
<input type="checkbox"/> OLT GPON 1-6	ONU-1-6-001: RX power gpon.onu.rx.pw[1-6,1]		7d	365d	Dependent item	0	-18.06 dbm	-0.5 dbm	component: onu data-type: rx_pwr onu_id: 1 ***
<input type="checkbox"/> OLT GPON 1-6	ONU-1-6-001: Serial number gpon.onu.serial[1-6,1]		7d		Dependent item	0	ZBXG01060001		component: onu data-type: serial-number onu_id: 1 ***
<input type="checkbox"/> OLT GPON 1-6	ONU-1-6-001: Status gpon.onu.status[1-6,1]		7d	0	Dependent item	0	online (1)		component: onu data-type: status onu_id: 1 ***
<input type="checkbox"/> OLT GPON 1-6	ONU-1-6-001: Temperature gpon.onu.temp[1-6,1]		7d	365d	Dependent item	0	49.8 °C	+0.3 °C	component: onu data-type: temperature onu_id: 1 ***
<input type="checkbox"/> OLT GPON 1-6	ONU-1-6-001: TX power gpon.onu.tx.pw[1-6,1]		7d	365d	Dependent item	0	1.66 dbm	-0.12 dbm	component: onu data-type: tx_pwr onu_id: 1 ***
<input type="checkbox"/> OLT GPON 1-6	ONU-1-6-001: Uptime gpon.onu.uptime[1-6,1]		7d	365d	Dependent item	0	05:35:42	+00:04:46	component: onu data-type: uptime onu_id: 1 ***
<input type="checkbox"/> OLT GPON 1-6	ONU-1-6-002: Distance gpon.onu.distance[1-6,2]		7d	365d	Dependent item	0	12.57 Km		component: onu data-type: distance onu_id: 2 ***
<input type="checkbox"/> OLT GPON 1-6	ONU-1-6-002: Last offline reason gpon.onu.last.off[1-6,2]		7d		Dependent item	0	null		component: onu data-type: last_offline onu_id: 2 ***
<input type="checkbox"/> OLT GPON 1-6	ONU-1-6-002: OLT RX power gpon.onu.olt.rx.pw[1-6,2]		7d	365d	Dependent item	0	-18.56 dbm	+0.14 dbm	component: onu data-type: olt_rx_pwr onu_id: 2 ***

Resultado do monitoramento





Obrigado

Thank you

Leonardo Southier

Technical Support Engineer & Trainer