

CKN TechAdvantage Webinar Presents:

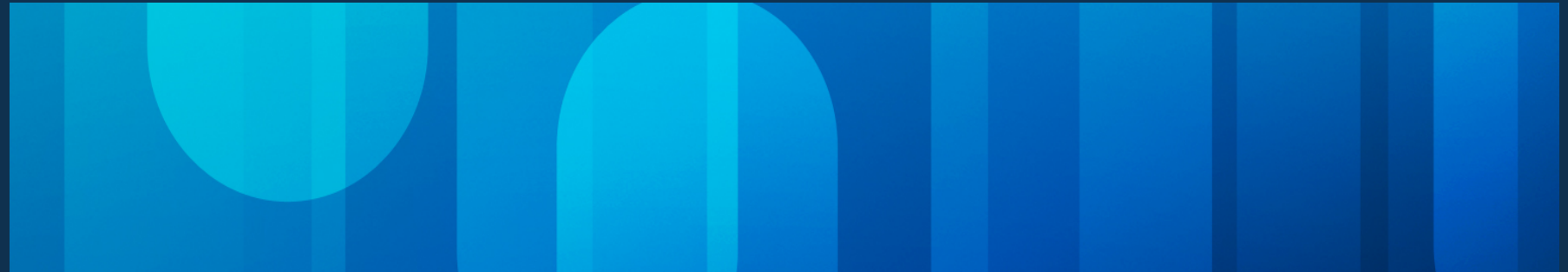
XR Usability

Present and Future

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Speaker Introduction

Speaker



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Presenters



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Session Objectives

At the end of the session, the participants should be able to understand:

- XR Usability Project & Goals
- Key Features

We also would like to get your feedback!



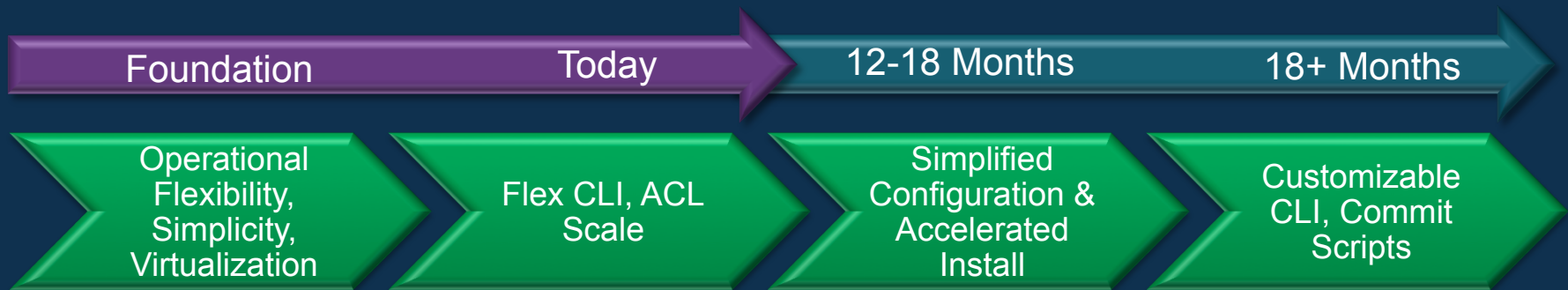
XR Usability, and Beyond

The Road to Simplified Operations

You Spoke
We Listened



ENHANCEMENT CATEGORIES



Leading the Way to Operational Simplicity

Usability Features

- 1 XR Service Packs
- 2 Smart Reload for SMUs
- 3 Ethernet Console
- 4 Accelerated Upgrade
- 5 Intelligent Provisioning
- 6 XR Flex CLI
- 7 Software Manager
- 8 Other Enhancements



A 3D grey box with the letters 'XR' in yellow.

1 XR Service Packs

Minimize System Reloads

Service Packs on XR provide packages of SMUs, and **reduce the number of reboots** for software updates between major releases

Benefits

- Lowers OpEx & Reduce TCO
 - Simplify Operations by tracking less SMUs
 - Reduce downtime & cost of system upgrades

Highlights

- Bundle multiple SMUs into a single package
- Similar to Combo SMU but crosses PI/PD borders
- Combine multiple reload SMUs to reduce reboots
- Critical SMUs are still available external to Service Packs

Released: 4.3.1



2 Smart Reload for SMU

Minimizing Upgrade Time

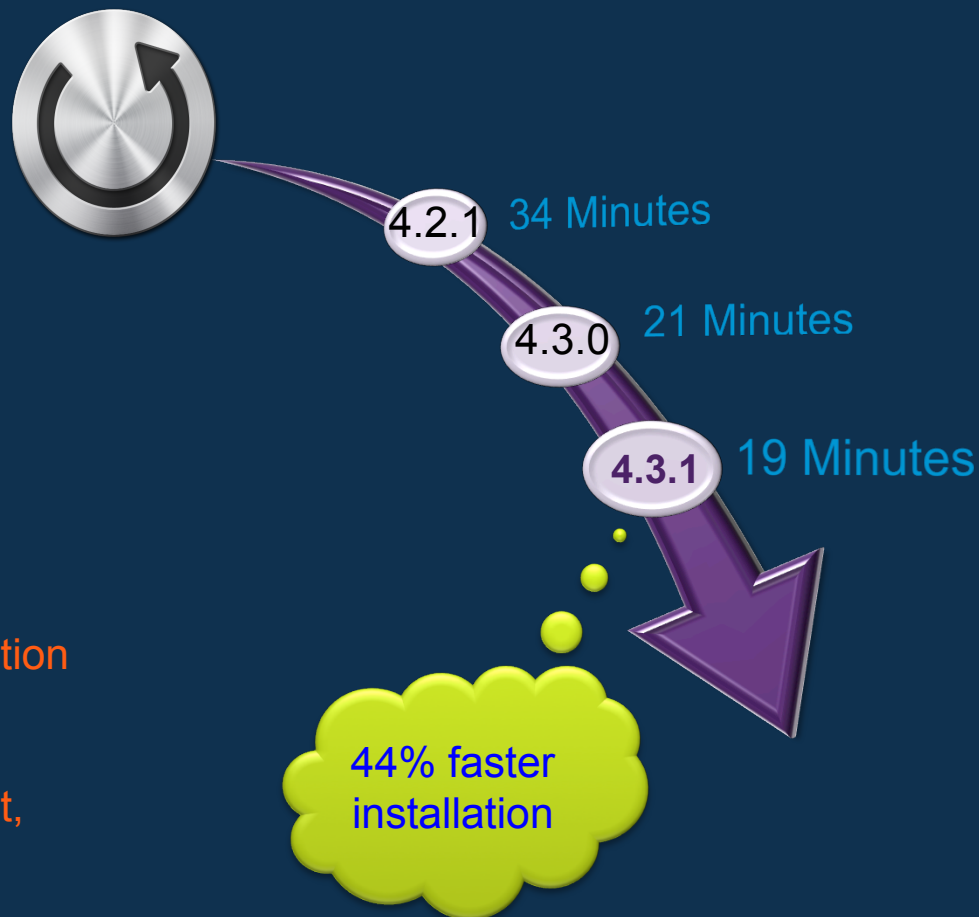
Released: 4.3.1

Benefits

- Installation speed improved by 44%
- Lower cost of system upgrades
- Lower downtime, shorter maintenance window

Highlights

- Improved traffic convergence time
- Significantly reduced traffic loss due to unplanned events (e.g. power outages)
- **Faster reload SMU installation and activation**
- Supports any-to-any image upgrade
- **Improved TFTP image download time**
- **Faster bootup: Faster IOS-XR CLI prompt, Line Card services and resources**



3 XR Ethernet Console

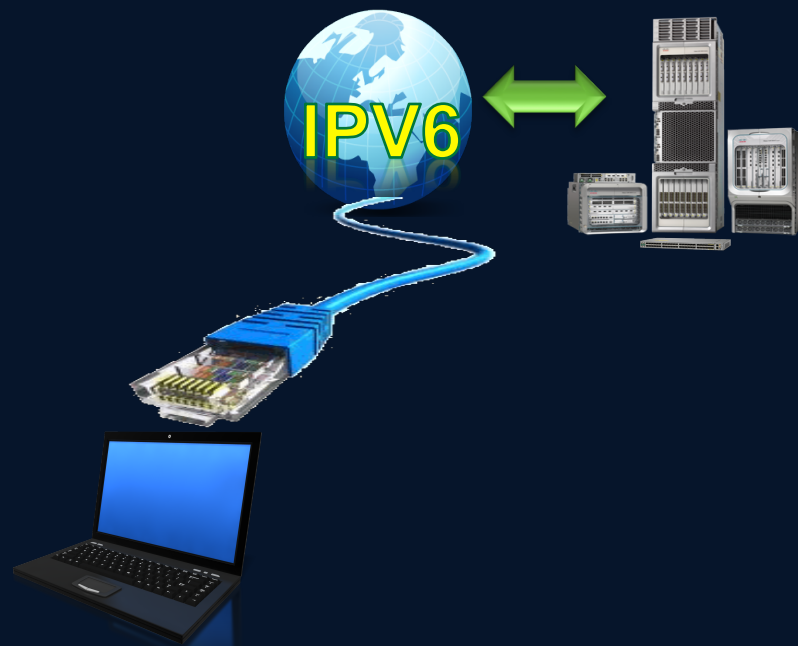
Remote Management

Benefits

- Complete remote router management
- No longer constrained by serial port to access the router console

Feature Highlights

- Router Management without a dedicated DCN Network
- Router console always available via Telnet over IPv6
- Common CLI tasks now available in XR CLI
- New Common variable - `IPV6_ETHERCONSOLE`
- Serial console is still accessible whenever needed



Released: 4.3.1

4 Accelerated Upgrade

Automation, Automation, Automation!

- Python based Auto upgrade tool
- Architecture support Plugins to expand and customize to any platform
- Ordered list of plugins
 - Pre upgrade plugins
 - Upgrade plugins
 - Post upgrade plugins
- Can set order of dependency between plugins
- On an upgrade failure box will be auto reverted & restored



Availability: 5.2.x FCS: 2HCY14

Accelerated Upgrade

Deep Dive

Syntax

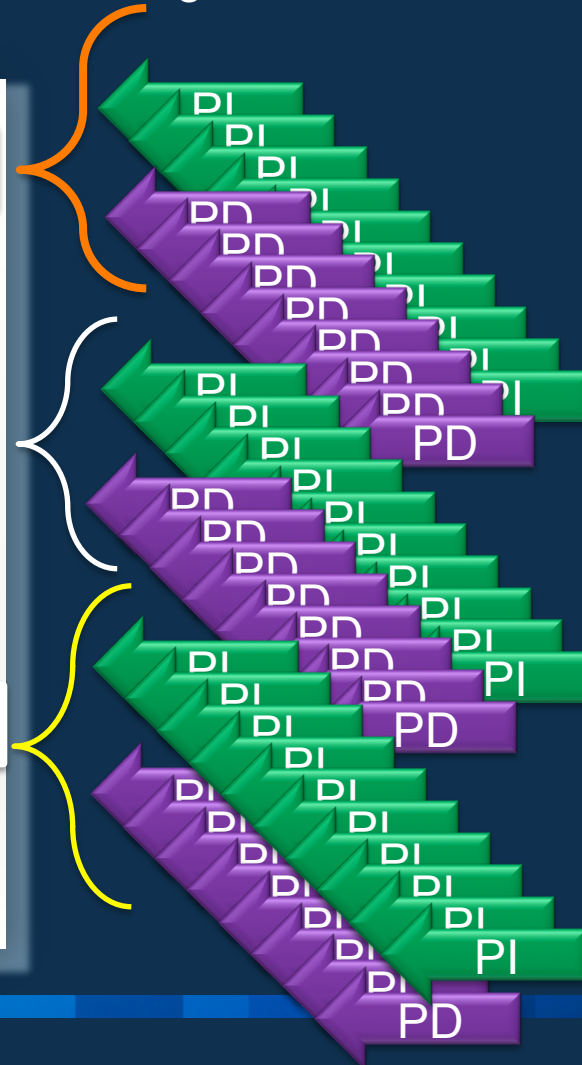
```
install auto-upgrade  
repository=<path> <version>  
[XML] [user-plugin] [OTHER  
INSTALL OPTIONS]
```

Pre-Upgrade Check

Upgrade

Post-Upgrade Check

Plugins



5 Intelligent Provisioning and Operations

Commit Scripts

- Script-based programming framework for customizing provisioning and operation tasks.
- Enables configuration error correction
 - detect invalid parameter based on custom-defined range
 - automatic config generation

Benefits

- Automation
- Higher level of abstraction



Availability: Release: 5.x.x FCS: 2HCY14

IPO: Some Use Cases

- Specify custom configuration constraints
 - SONET/SDH interfaces never have a MTU < 4 KB
- Create new CLI to simplify business use cases
 - Define macros that expand to a set of CLIs
- Detect config inconsistencies
 - Detect whether all LDP-enabled interfaces are configured for an IGP



6 XR FlexCLI

Easy Provisioning!



FlexCLI's Configuration groups and auto inheritance simplifies feature configuration for end-users. Enables grouping of common configs

Benefits

- Reduced configuration from 1 Million lines to 70K lines!
- Leaner and easier system configuration

Feature Highlights

- Regular Expressions
- Automatic Configuration Inheritance
- Concise and Expanded Views
- Configuration Checks

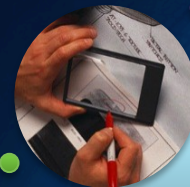
Released: 4.3.1



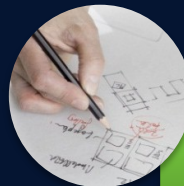
Easy Maintenance



Fewer Commands



Avoid User Errors



Simplified Configuration Groups

XR FlexCLI

Deep Dive!

Introducing Config Groups

- Group a set of common configs with a label
- Apply it to any level in the config hierarchy
- Can use regular expressions
- Has implicit, relative priority
- Supports Automatic config inheritance



Templates and config apply-groups

CURRENT

```
router isis green
interface GigabitEthernet0/0/0/0
  lsp-interval 20
  hello-interval 40
  address-family ipv4 unicast
  metric 10
!
interface GigabitEthernet0/0/0/1
  lsp-interval 20
  hello-interval 40
  address-family ipv4 unicast
  metric 10
!
interface GigabitEthernet0/0/0/2
  lsp-interval 20
  hello-interval 40
  address-family ipv4 unicast
  metric 10
!
```

NEW

```
group G-ISIS-INTERFACE
router isis “.*”
  interface “Gig.*”
  lsp-interval 20
  hello-interval 40
  address-family ipv4 unicast
  metric 10

router isis green
  apply-group G-ISIS-INTERFACE
  int GigabitEthernet0/0/0/0
  int GigabitEthernet0/0/0/1
  int GigabitEthernet0/0/0/2
```

Key Concept: Config Group's Scope

- Where a group gets applied determines what actually gets changed
- “Down and Right” model
 - What's above you in the config has to match
 - What's below you gets applied

Config Scope: Example

OLD

```
router isis green
interface GigabitEthernet0/0/0/0
  lsp-interval 20
  hello-interval 40
  address-family ipv4 unicast
  metric 10
!
interface GigabitEthernet0/0/0/1
  lsp-interval 20
  hello-interval 40
  address-family ipv4 unicast
  metric 10
!
```

NEW

```
group G-ISIS-INTERFACE
```

```
router isis ".*"
  interface ".*"
    lsp-interval 20
    hello-interval 40
    address-family ipv4 unicast
    metric 10
```

```
config
```

```
router isis green
  interface GigabitEthernet 0/0/0/1
    apply-group G-ISIS-INTERFACE
```

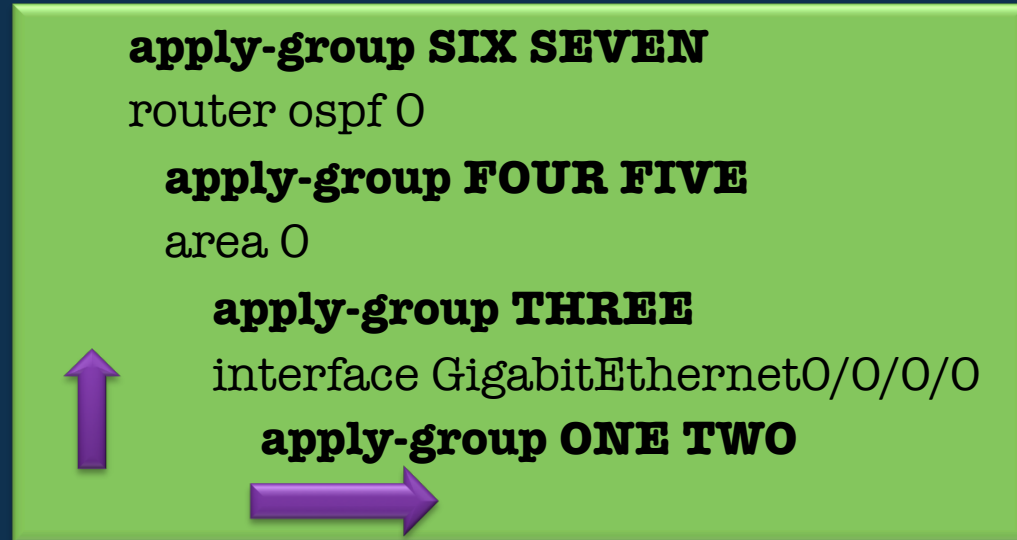
```
config
```

```
router isis green
  interface GigabitEthernet 0/0/0/3
    address-family ipv4 unicast
    apply-group G-ISIS-INTERFACE
```

Key Concept: Inheritance & Priority Model

'Up and Right' Rule

- Lowest (most specific) config takes precedence
- Within any level, first group applied takes precedence
- In this example:
 - "ONE" has the highest priority
 - "SEVEN" has the lowest
 - ONE is applied before TWO is applied



FlexCLI: Demo Agenda

- Config group and apply-group syntax
- Concise view / Inheritance view
- Local Vs. Group config precedence
- apply-group prioritization in same level
- apply-group hierarchical handling
- Deletion of group/apply-group



Flex CLI DEMO

by

Sharmila Palani

Time: 0:20

Current Status

XR 4.3.1:

- ✓ Config template
- ✓ Apply groups



Flex CLI: Coming Soon...

Selected

THE FOLLOWING **PREVIEW** HAS BEEN APPROVED FOR
ALL AUDIENCES
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Flex CLI: Coming Soon...

- Delete one or more configuration groups from **apply-group** command
 - **apply-group-remove** <group-name> [group-name]
- Command to display inherited configurations that have failed
 - **show config failed inheritance**
- Extension to 'show run'; Option to show inherited configuration
 - **show run [option] inheritance**

XR Software Manager

Highlights



Automatic analysis and optimization of router software

Periodically consult cisco.com for SMU info and updates

Secure, scalable, platforms: Win, Mac, VM

GUI; written in Java; runs as standalone tool

FREE and Public to ALL IOS XR customers



M2M

Machine to Machine



XR Software Manager

Benefits

Time saved: No more searching/querying Cisco.com for SMUs

Cost savings by avoiding incorrect and missing SMUs

New SMU Alerts: Similar to iPhone software upgrades

Analyze and recommend your device specific SMUs



M2M
Machine to Machine



XR Software Manager

Work Flow



Software Manager DEMO

by

Alex Tang

Time: 0:20

8 Other Enhancements

- Commit check
- Show config differences as part of commit execution
- Unified diff commit view
- AAA enhancements
- Route policy editing enhancements
- Show command enhancements and consistency across similar software modules (IPv4 & IPv6 etc..)
- ... and many more...



Key Takeaways

- XR Usability's goal is to enhance the way customers interact & manage network devices
- Constantly working on enhancing the user experience
- More on the way, applying to other OSes



Thank You!!