

# Extending Xen To Better Support HVM Guests

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# Outline



- Motivation and Background
- Proposed Architecture
- Current Status

The background of the slide is a solid green color with a pattern of diagonal stripes in varying shades of green, creating a sense of movement and depth. The stripes are oriented from the top-left to the bottom-right.

# Motivation and Background

# Current Situation

- CPUID handling
- MSR handling
- Hypercall page management

# Motivation

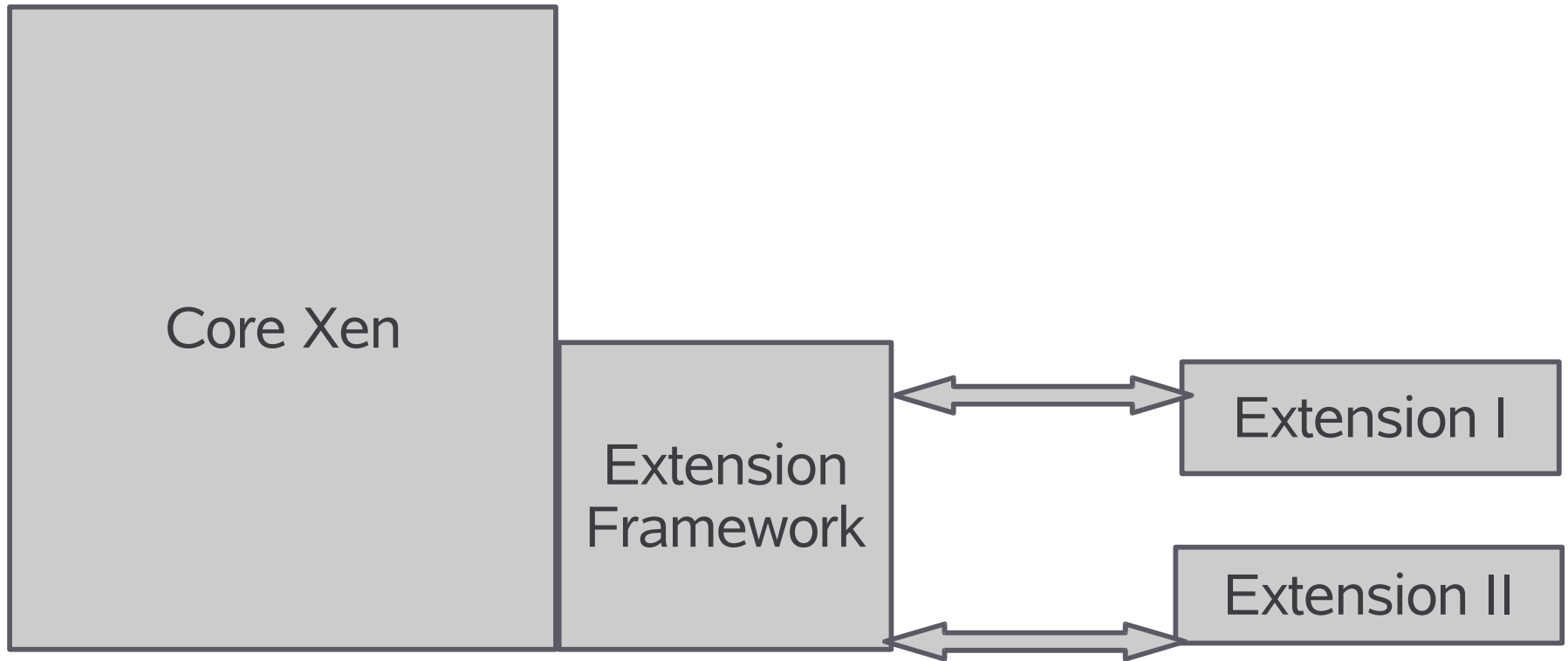
- Experiment with progressive para-virtualization
- Support Guest OS specific APIs for enhanced performance
- Vendor specific enhancements
  - Support “Enlightened” proprietary guests

# Key Requirements

- Granular extension:
  - Per-domain basis
  - Run-time selectable
- Modular
  - Controlled interaction with core Xen code
- Minimal performance impact
- Extensible

# Proposed Architecture

# Extension Architecture



# Extension Framework

- Supports per-domain extension
  - Manages extension binding – domain attributes currently used to specify extension ID.
  - Exposes Xen APIs available for consumption by the extension modules.
  - Hooks to trigger the extension code

# Intercepts (work in progress)

- Domain Create
- Domain Destroy
- VCPU Initialize
- VCPU Destroy
- CPUID
- MSR (Read/Write)
- Hypercall handling
- Continuation

# Xen Dependencies

- HVM function table
- Memory management
- MMIO handler
- VCPU (Pause/Unpause)
- Time and Timeout management

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Current Status

# Status & Future Plans

- Everything described here is currently functional.
  - Enlightened longhorn is functional on the Novell extension.
- Experimenting with “Progressive Para-Virtualization”
- Experimenting with different “intercept strategies”
- Experimenting with packaging options

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# Color Palette



BLUE

RGB  
28 130 185



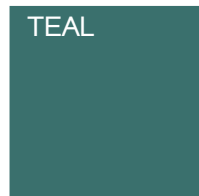
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ORANGE

RGB  
230 120 20



TEAL

RGB  
50 118 109



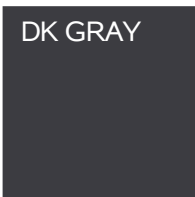
GREEN

RGB  
98 158 31



YELLOW

RGB  
255 221 0



DK GRAY

RGB  
60 60 65



MD GRAY

RGB  
90 90 100



LT GRAY

RGB  
204 204 205

## Note:

The gray dotted-line box represents the margins or “working area” into which all text and most graphics and diagrams should conform.

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1. Go to the “**Tools**” menu
2. Select “**Options**”
3. Expand “**OpenOffice.org**”
4. Select “**Colors**”
5. Delete existing colors (one-by-one)
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