



Printer Working Group Update of CIM Printer Model

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Goals

- Bring the CIM model of printing up to date with PWG models
 - CIM schema includes classes for Printer, PrintService, PrintJob, PrintQueue
 - Current classes missing many interesting attributes
 - CIM_Printer class has approx 30 properties; by comparison PrinterMIB has approx 155 interesting properties
 - Current classes not clearly defined
 - CIM_Printer contains some aspects of PrintService
- Ensure that every property in CIM printing-related classes is implementable interoperably

Combining Phases 2 & 3: Corrections & Extensions

- Fixes: clarify definitions of ambiguous properties; deprecate non-interoperable properties; move properties to correct parent class
- Cover aspects of physical printer devices that need management
 - Items that are available through printer management applications -- and are needed
 - What paper is in what tray? How much paper is left?
 - What toner, ink, or other supplies are needed?
 - What covers are open? What alarm lights are on?
 - How many pages have been printed?
 - Etc.

The Updated Model Must Be Complete

- PWG concerned about completeness and correctness
 - Management applications migrating to the CIM model
 - If a property can't be seen -- and seen correctly -- through the CIM model, then it can't be seen at all
 - Many properties of printers (and related classes) are currently not represented in CIM
- Several major subunits are not represented at all in CIM
 - Console, covers, input/output trays, markers, supplies, colorants, media paths, channels, interpreters, alerts, and most counters
- Carry forward properties that are useful, not just because they're there

Select Properties to Carry Forward

- Agreed on a target device
 - Shared office printers, sheet-fed, unattended, monochrome or color, laser or inkjet, simplex or duplex, multiple input trays, few options
 - Need to be managed remotely: not a production printer with an operator
- Spreadsheet of all properties from latest MIB, principals voted
 - Priority A = equivalent function must be in CIM to preserve currently used management functions
- Reduced 155 properties (of Printer MIB V2) to
 - 94 A (essential)
 - 20 B (nice addition)

Modeling Strategy

- Add a few properties to base class CIM_Printer
- Create new classes for the missing subunits
- Most were represented in SNMP by tables of repeating items
 - In CIM, represent table by
 - Class for table itself
 - Class for table row
 - Association of rows to table
 - Total $2N+1$ instances

Class Hierarchy

- Tables for subunits subclassed from Collection
- Rows subclassed from ManagedElement
 - Most contain mix of declarative data and status
- PrinterSettingData for current applied defaults

- Look at spreadsheet of classes and properties, and pictures

Questions?