



## CenterPoint Energy automates SAP operations with SAP Landscape Management

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# About the Speakers

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# Agenda

- Introduction
- SAP Landscape
- Our Challenges
- Our Goals
- Why SAP LaMa?
- Overview of CNP's System Refresh
- System Refreshes with SAP Landscape Management (LaMa)
- Benefits of SAP LaMa
- Summary
- Further Information
- Q & A

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# CenterPoint Energy: An Electric and Natural Gas Utility



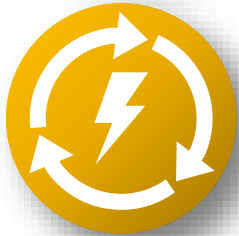
## Electric Transmission & Distribution and Power Generation

- Maintain wires, poles and electric infrastructure serving more than 2.5 million metered customers in the greater Houston area and in southwestern Indiana
- Own and operate nearly 1,300 megawatts of electric generation capacity in Indiana



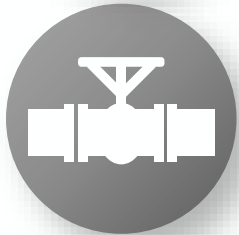
## Natural Gas Distribution

- Sell and deliver natural gas to 4.5 million homes and businesses in eight states: Arkansas, Indiana, Louisiana, Minnesota, Mississippi, Ohio, Oklahoma and Texas
- Invest in modernizing natural gas infrastructure and are committed to eliminate cast-iron pipe in all our territories



## Competitive Energy Businesses

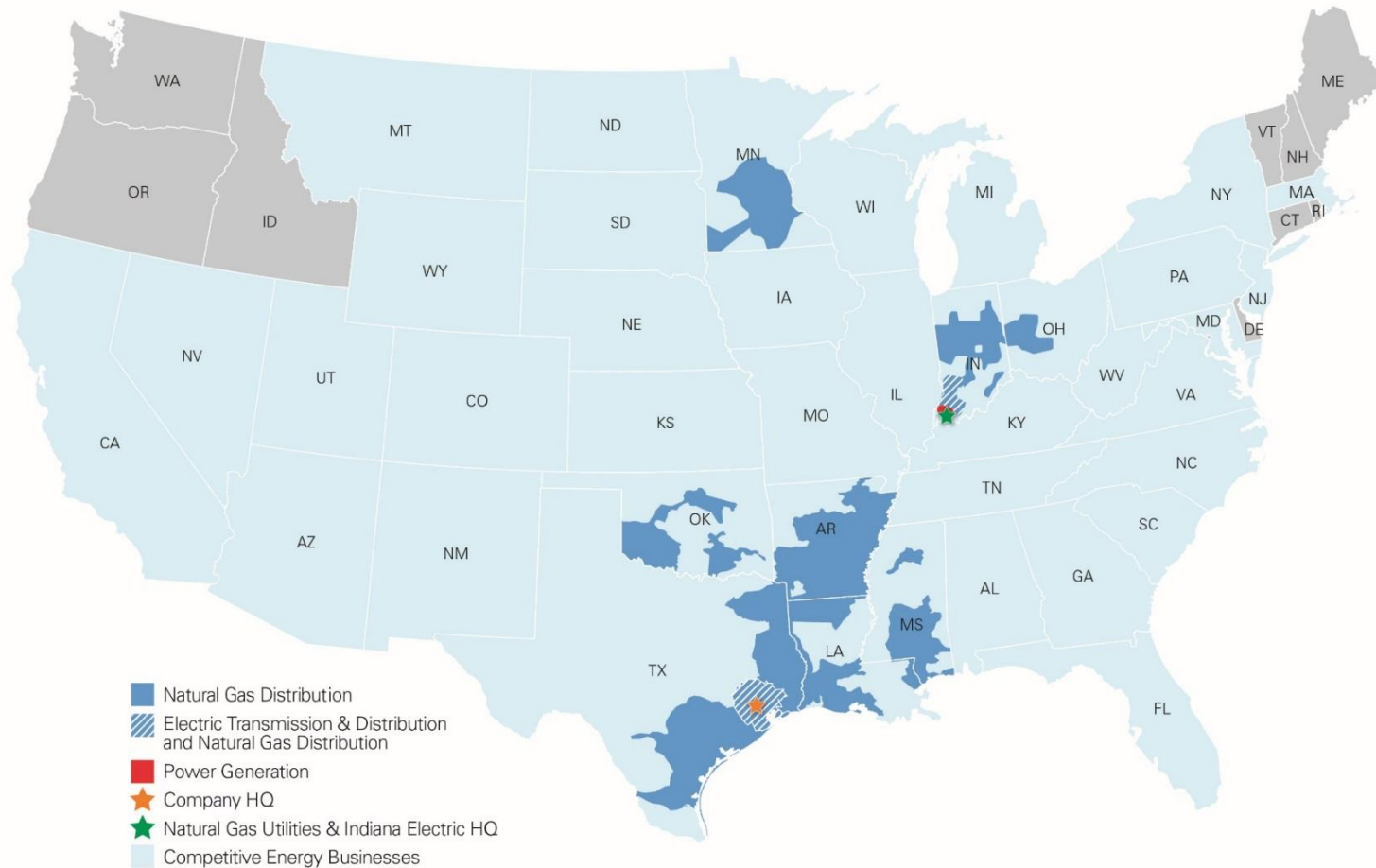
- Natural gas marketing and energy-related services
- Energy efficiency, sustainability and infrastructure modernization solutions
- Construction and repair services for pipeline systems, primarily natural gas
- Footprint spans nearly 40 states



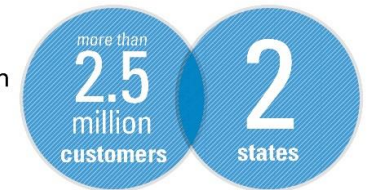
## Midstream Investments

- Own 54.0 percent of the common units representing limited partner interests in Enable Midstream Partners
- Enable operates and develops natural gas and crude oil infrastructure assets

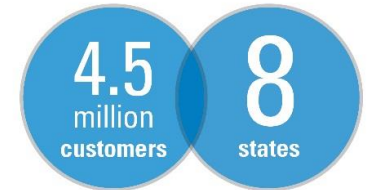
# CenterPoint Energy: An Electric and Natural Gas Utility



Electric Transmission & Distribution  
and Power Generation



Natural Gas Distribution



Competitive Energy Businesses



# CenterPoint Energy SAP Landscape

- 12 SAP NetWeaver systems Landscape consisting of SAP ECC, SAP CRM, SAP BPC, SAP BW, SAP SRM, SAP SCM, SAP PO, SAP GRC, SAP Solution Manager, SAP SLT, SAP Enterprise Portal, SAP S/4 HANA
- Each landscape has 4 systems with Sandbox, Development, Pre-Production & Production
- N+8 SAP NetWeaver systems to support concurrent projects on SAP ECC and SAP CRM
- SAP ECC Production size ~15TB (compressed) ~22TB (uncompressed)
- Total 170 SAP Systems



# Our Challenges

- Multiple Projects with high demand for latest production system copy
- Pre-production data quality is not close to production. 250GB growth every month
- System refreshes taking 5 days with multiple resources
- System restart takes 45 minutes due to number dependent systems and application servers
- CenterPoint is in middle of migrating entire SAP and few non-SAP applications to HANA, need a central tool to manage HANA from operation perspective
- Updating SAP kernel requires downtime

# Goals



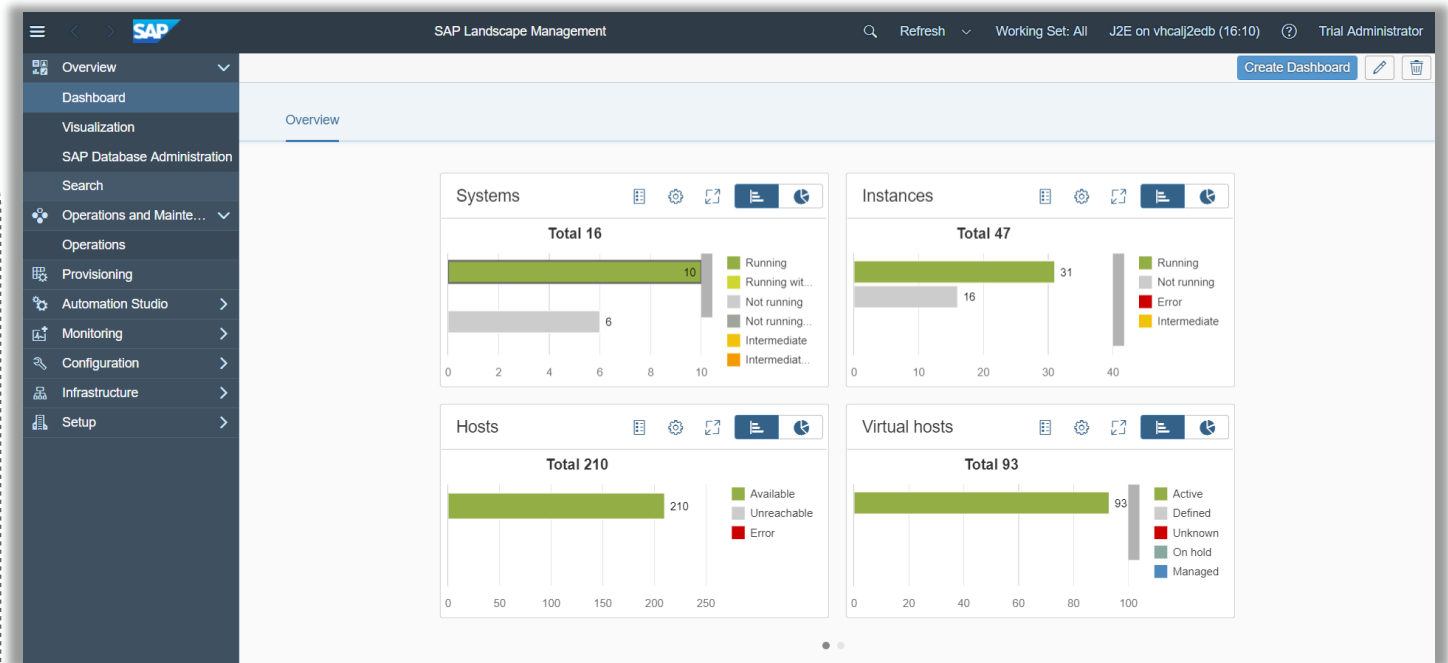
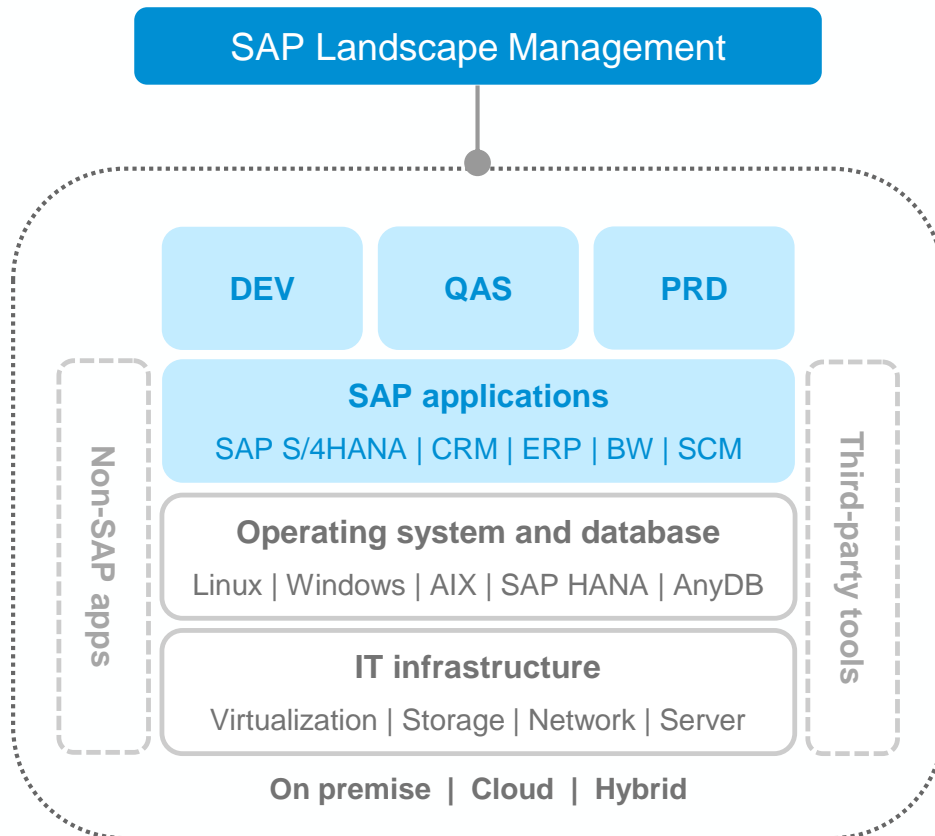
- Reduce the system refresh time from 5 days to under a day
- Reduce manual tasks & eliminate mistakes by automation
- Reduce the O&M cost



- Improve System Reliability
- Improve efficiency of Basis Resources
- Consistent and high quality in finished system copy
- Automate the system refresh by click of button
- Complete the whole system refresh over the weekend and turnover to business by Monday morning

# What is SAP Landscape Management (LaMa) ?

SAP Landscape Management (LaMa) is an orchestration solution to simplify, automate, and centralize the management and operations of your SAP landscapes running on-premise, in the public or private cloud as well as in hybrid environments.



# What are the Key Capabilities of LaMa?



## Automate and standardize SAP operations

- Automate clone, copy, and refresh activities including BDLs and post-copy tasks
- Perform single and mass operations like start/stop on systems and hosts with built-in support for intersystem dependencies
- Get landscape-wide visibility utilizing dashboards and visualization features



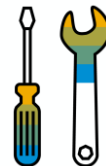
## Management of hybrid SAP landscapes

- Use adapters for easy management of SAP systems deployed on Microsoft Azure, Amazon Web Services, and OpenStack cloud platforms
- Gain full visibility of your SAP systems, both on premise and in the cloud
- Coordinate systems management tasks across cloud-based and on-premise environments



## Simplified management of SAP HANA and SAP S/4HANA systems

- Reduce time spent on routine move and copy tasks, visualization, and mass operations for SAP HANA systems
- Automate critical tasks such as takeover and failback operations
- Achieve near-zero downtime maintenance on activities such as automated HANA and OS updates



## Tailor to your precise requirements

- Integrate existing scripts and best practices into workflows supported by SAP Landscape Management
- Create custom processes, and build your own operational templates and provisioning blueprints with the automation studio
- Leverage REST-APIs to connect to your SAP systems and perform tasks

# Why SAP LaMa ?

- CenterPoint has strategic partnership with SAP
- LaMa simplifies the system refresh and automates the SAP landscape management
- Centralize operations of SAP systems
- Rolling Kernel Switch (RKS) upgrade – minimize the downtime to call centers
- Easy HANA Operations

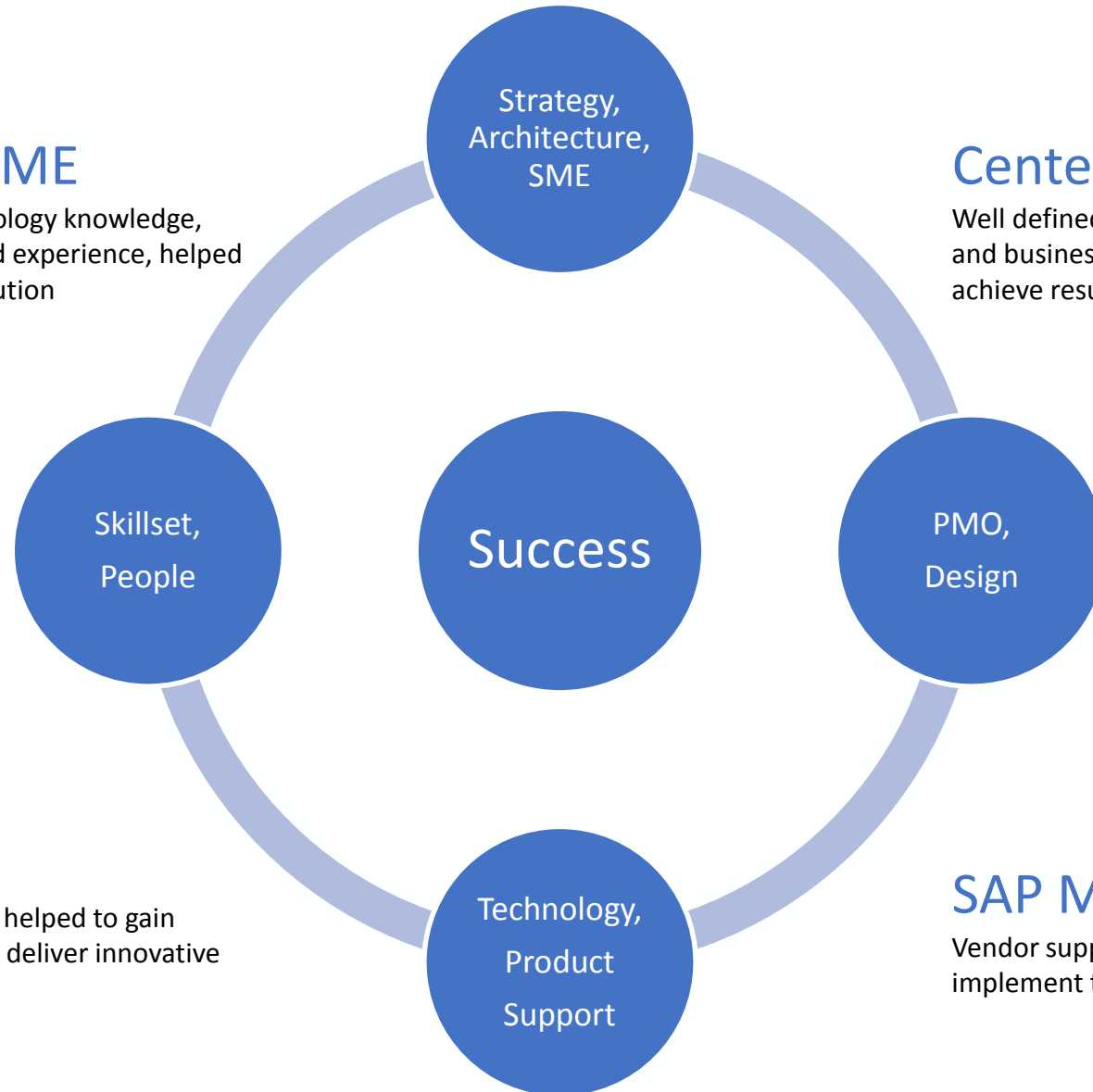
# Strategic Partnership

## CenterPoint SME

SMEs with business, technology knowledge, along with the skill sets and experience, helped successfully deploy the solution

## CenterPoint Energy

Well defined strategy, vision, right architecture and business knowledge, provided guidance to achieve results



## SAP

Right technologies Product helped to gain competitive advantage and deliver innovative solution

## SAP MaxAttention

Vendor support and SAP Engineer helped to implement the product during the project cycle

# Overview of CNP'S LaMa Implementation

## Post Copy Automation

- Streamlined manual tasks to LaMa Export & Import tasks
- Customized LaMa Export & Import tasks to suit the SAP ECC/CRM/SRM/EWM & BW landscape
- Developed custom programs to lock/unlock users and to export/import custom tables data
- Streamlined BDLS for the best performances

## System Recycle

- Implemented custom start/stop operation for IBM Power High Availability (HA) systems

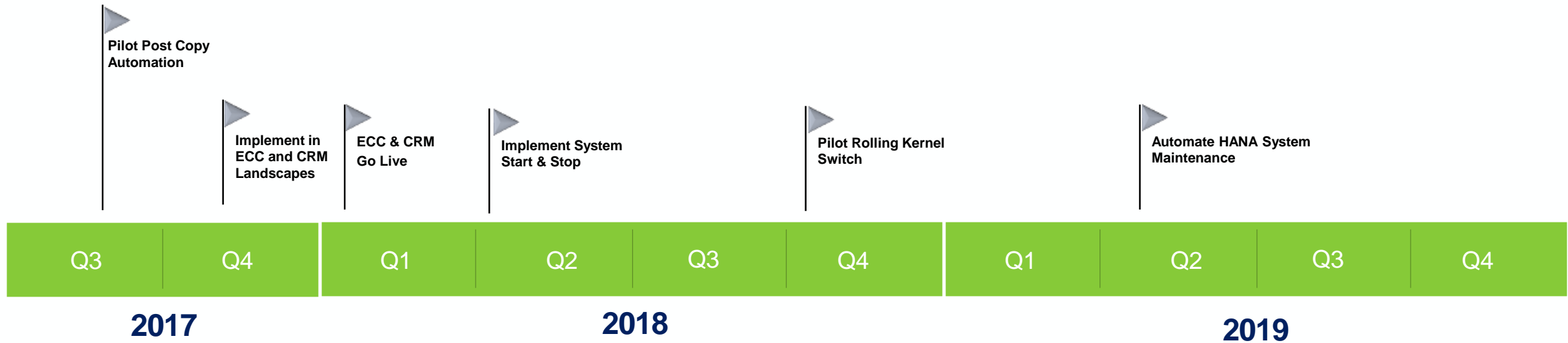
## Rolling Kernel Switch

- Rolling Kernel Switch upgrade (RKS) is in POC and plan to implement in Production by Q3 2019

## HANA Operation

- Planned HANA System replication setup and operation
- Planned to implement additional SAP Application server via provisioning

# LaMa Implementation Timeline





# Manual System refresh tasks

System Refresh Activities	Day1	Day2	Day3	Day4	Day5	Day6
<b>Infrastructure Prep</b> ➤ File system space requirement ➤ sudo access	4 hours					
<b>Database Prep</b> ➤ Space requirement ➤ sudo access	4 hours					
<b>Basis Prep</b> ➤ Manual export conf tables	8 hours					
<b>Database Restore</b>		10 hours				
<b>Post Database Copy</b> ➤ Roll forward ➤ Cleanup log tables			4 hours			
<b>Basis Post Tasks</b> ➤ Manual BDLs ➤ Manual Import conf tables ➤ Manual conf of SOA			48 hours			
<b>Application Validation</b>				24 hours		
<b>Business Validation</b>					8 hours	
<b>Release Systems</b>						★

# System Combination details refreshes

Total 5 days to complete 4 systems with 4 resources

ECC

CRM

SCM

SRM

- DB2 DB Size: 15TB (compressed) & 22TB (uncompressed)
- BDLS 16hrs
- Post task 2 days

- DB2 DB Size: 1.4TB (compressed) & 3.2TB(uncompressed)
- BDLS 6hrs
- Post task 2 days

- HANA DB Size: 500GB
- BDLS 3hrs
- Post task 2 days

- DB2 DB Size: 250GB
- BDLS 2hrs
- Post task 2 days

# LaMa - Customized the PCA Export & Import tasks

## PCA Export

Display Task List ZCNP\_SAP\_BASIS\_COPY\_REF\_EXPORT, Build 00000

Phase	Component	Task	Task Description
Verification	CHECK	CL_STCT_SC_PREPARE_SICK	Initial Consistency Check (SICK)
Precheck	CHECK	CL_STCT_SC_PREPARE_CAPACITY	Prepare PCA Environment Check - File system and Tool
Cleanup	BW_SAPI	CL_RSAPI_BIW_DISCONNECT	Disconnect this Source System from Not Copied BW Systems
Precheck	BW	CL_STCT_SC_BW_CHECK	Check whether the system is a BW or connected to any BW
Prepare	PCA	CL_STCT_SC_PREPARE_PCA_REFRESH	Prepare PCA Refresh Parallel Import Processing
Export	ALECONFIG	CL_STCT_SC_EXPORT_ALECONFIG	Export ALE Configuration
Export	ALECUSTOM	CL_STCT_SC_EXPORT_ALECUSTOM	Export ALE Customizing
Export	ARCHIVE_ADK	CL_STCT_SC_EXPORT_ARCHIVE_ADK	Export Archiving ADK Configuration
Export	ARCHIVE_CUST	CL_STCT_SC_EXPORT_ARCHIVE_CUST	Export Archiving Customizing Configuration
Export	ARCHIVE_OBJ	CL_STCT_SC_EXPORT_ARCHIVE_OBJ	Export Archiving Objects Configuration
Export	BATCHJOBS	CL_STCT_SC_EXPORT_BATCHJOBS	Export Batch Jobs (SM37)
Export	BATCHJOBS	CL_STCT_SC_EXPORT_BATCH2	Set Batch Jobs to Released via BTCTRNS2
Export	VARIANTS	CL_STCT_SC_EXPORT_VARIANTS	Export Report Variants
Export	BATCHSRVGRP	CL_STCT_SC_EXPORT_BATCHSRVG	Export Batch Server Groups (SM61)
Export	CCMSCONFIG	CL_STCT_SC_EXPORT_CCMSCONFIG	Export CCMS Configuration (RZ20, RZ21)
Export	DBACOCKPIT	CL_STCT_SC_EXPORT_DBACOCKPIT	Export DBA Cockpit Configuration (DBACOCKPIT)
Export	EXTCOMMAND	CL_STCT_SC_EXPORT_EXTCOMMAND	Export Operating System Commands (SM69)
Export	FILE	CL_STCT_SC_EXPORT_FILE	Export Cross-Client File Names/Paths (FILE)
Export	LICENSE	CL_STCT_SC_EXPORT_LICENSE	Export SAP License (SLICENSE)
Export	LOGONGROUP	CL_STCT_SC_EXPORT_LOGONGROUP	Export Logon Groups (SMLG)
Export	OPMODE	CL_STCT_SC_EXPORT_OPMODE	Export Operation Modes (RZ04)
Export	PRINTER	CL_STCT_SC_EXPORT_PRINTER	Export Spool Configuration (SPAD)
Export	RFC	CL_STCT_SC_EXPORT_RFC	Export RFC Connections (SM59)
Export	RFC_IN	CL_STCT_SC_EXPORT_RFCIN	Export RFC Inbound Queue Configuration (SMQ2)
Export	RFC_OUT	CL_STCT_SC_EXPORT_RFCOUT	Export RFC Outbound Queue Configuration (SM58, SMQ1)
Export	BGRFC	CL_STCT_SC_EXPORT_BGRFC	Export Background RFC (SBGRFCMON)
Export	SLD_RZ70	CL_STCT_SC_EXPORT_RZ70	Export SLD Data Supplier Configuration (RZ70)
Export	SCOT	CL_STCT_SC_EXPORT_SCOT	Export SAPconnect Configuration (SCOT)
Export	SICF	CL_STCT_SC_EXPORT_SICF	Export HTTP Service Configuration (SICF)
Export	SLD_APICUST	CL_STCT_SC_EXPORT_SLDAPICUST	Export SLD Access Data Configuration (SLDAPICUST)
Export	SM14	CL_STCT_SC_EXPORT_SM14	Export Update Program Administration (SM14)
Export	SM19	CL_STCT_SC_EXPORT_SM19	Export Security Audit Profile Configuration (SM19)
Export	STRUST	CL_STCT_SC_EXPORT_STRUST	Export Trust Manager Configuration (STRUST)
Export	SNC	CL_STCT_SC_EXPORT_SNC	Export SNC Access Control List (STRUSTSSO2)

## PCA Import

Display Task List ZCNP\_SAP\_BASIS\_COPY\_REF\_IMPORT, Build 00000

Autom. Phase	Component	Task	Task Description
Verification	CHECK	CL_STCT_SC_PREPARE_SICK	Initial Consistency Check (SICK)
Precheck	CHECK	CL_STCT_SC_PREPARE_CAPACITY	Prepare PCA Environment Check - File system and Tool
Cleanup	BW_SAPI	CL_RSAPI_BIW_DISCONNECT	Disconnect this Source System from Not Copied BW Systems
Precheck	BW	CL_STCT_SC_BW_CHECK	Check whether the system is a BW or connected to any BW
Prepare	PCA	CL_STCT_SC_PREPARE_PCA_REFRESH	Prepare PCA Refresh Parallel Import Processing
		ZCL_STCT_SC_MANUAL_STEP	<Task object ZCL_STCT_SC_MANUAL_STEP could not be cre...
Prepare	BATCHJOBS	CL_STCT_SC_EXPORT_BATCH	Set Batch Jobs to Released/Suspended via BTCTRNS1
		ZLAMA_LOCK_USERS	Report ZLAMA_LOCK_USERS - Program to unlock Basis/DBA Us...
Prepare	ICM	CL_STCT_SC_PREPARE_DISABLE_HTTP	Disable HTTP communication (SMICM)
Cleanup	CUSTOMER	CL_STCT_SC_CLEANUP_CUSTOMER	Cleanup of Customer Defined Configuration Tables
Import	BATCHSRVGRP	CL_STCT_SC_IMPORT_BATCHSRVG	Import Batch Server Groups (SM61)
Cleanup	SECSTORE	CL_STCT_SC_CLEANUP_SECSTORE	Delete inconsistent Secure Store Entries (SAP Note 1532825)
Cleanup	MONI	CL_STCT_SC_CLEANUP_MONITORING	Cleanup of Operating System Monitoring Data (ST03N)
Cleanup	CCMSCONFIG	CL_STCT_SC_CLEANUP_CCMSCONFIG	Cleanup of CCMS Configuration (RZ20, RZ21)
Cleanup	CCMSHISTORY	CL_STCT_SC_CLEANUP_CCMSHISTO...	Cleanup of CCMS History
Cleanup	OTHERS	CL_STCT_SC_CLEANUP_OTHERS	Cleanup of Selected ABAP Basis Tables
Cleanup	DBACOCKPIT	CL_STCT_SC_CLEANUP_DBACOCKPIT	Cleanup of DBA Cockpit Configuration (DBACOCKPIT)
Cleanup	RFC_IN	CL_STCT_SC_CLEANUP_RFC_IN	Cleanup of RFC Inbound Queue Configuration (SMQ2)
Cleanup	RFC_OUT	CL_STCT_SC_CLEANUP_RFC_OUT	Cleanup of RFC Outbound Queue Configuration (SM58, SMQ1)
Cleanup	BGRFC	CL_STCT_SC_CLEANUP_BGRFC	Cleanup of Background RFC (SBGRFCMON)
Cleanup	SCOT	CL_STCT_SC_CLEANUP_SCOT	Cleanup of SAPconnect Data
Cleanup	PRINTER	CL_STCT_SC_CLEANUP_SPOOL	Cleanup of Spool Requests and Logs (SP01)
Cleanup	STRUST	CL_STCT_SC_CLEANUP_STRUST	Cleanup of Trust Manager Configuration (STRUST)
Cleanup	TMS	CL_STCT_SC_CLEANUP_TMS	Cleanup of TMS Configuration (STMS)
Cleanup	TC_TASKRUN	CL_STCT_SC_CLEANUP_TC_TASKRUN	Cleanup of Task List Runs (STC01)
Cleanup	TC_TASKVARI	CL_STCT_SC_CLEANUP_TC_TASKVA...	Cleanup of Task List Variants (STC01)
Cleanup	WEBSERVICE	CL_STCT_SC_CLEANUP_WEBSERVICE	Cleanup of Web Service Configuration (SOAMANAGER)
Cleanup	SXMB_ADM	CL_STCT_SC_CLEANUP_SXMB_ADM	Cleanup of Integration Engine Runtime Data (SXMB_ADM)
Cleanup	ETD	CL_STCT_SC_CLEANUP_ETD	Cleanup of ETD cache tables
Configuration	TSLE4	CL_STCT_SC_CONFIG_TSLE4	Configuration of instance entries in TSLE4 (SM21)
Configuration	PROFILE	CL_STCT_SC_CONFIG_PROFILES	Configuration of System Profiles (RZ10)
Import	LICENSE	CL_STCT_SC_IMPORT_LICENSE	Import SAP License (SLICENSE)

## Custom tasks

Prepare	BDLS	CL_STCT_SC_PREPARE_BDLS	Analysis of Logical System Names
Configuration	BDLS	CL_STCT_SC_CONV_BDLS	Conversion of Logical System Names
Postprocessing		ZLAMA_UNLOCK_CLIENT_000	Report ZLAMA_UNLOCK_CLIENT_000 - Program to unlock Clie...
Postprocessing		ZLAMA_UNLOCK_SWATTEAM	Report ZLAMA_UNLOCK_SWATTEAM - Program to unlock Swa...
Verification	CUSTOMER	CL_STCT_SC_MANUAL_STEP	Customer: Manual action; Confirmation required
Postprocessing		ZLAMA_UNLOCK_USERS	Report ZLAMA_UNLOCK_USERS - Program to unlock all users a...

# LaMa – BDLS Improvement

- Added Parallel BDLS analysis
- Added multiple logical systems in parallel conversion

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Prepare	BDLS	Analysis of Logical System Names			Parallel BDLS analysis of logical system names
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Configuration	BDLS	Conversion of Logical System Names			Parallel BDLS conversion of logical system names



Logical System Name

Logical Systems  to

No. of Entries for Each Package

Tables  to

Cross-Client

---

Parallel Processing

Parallel Processing Active

RFC Server Group

Number of Parallel Processes



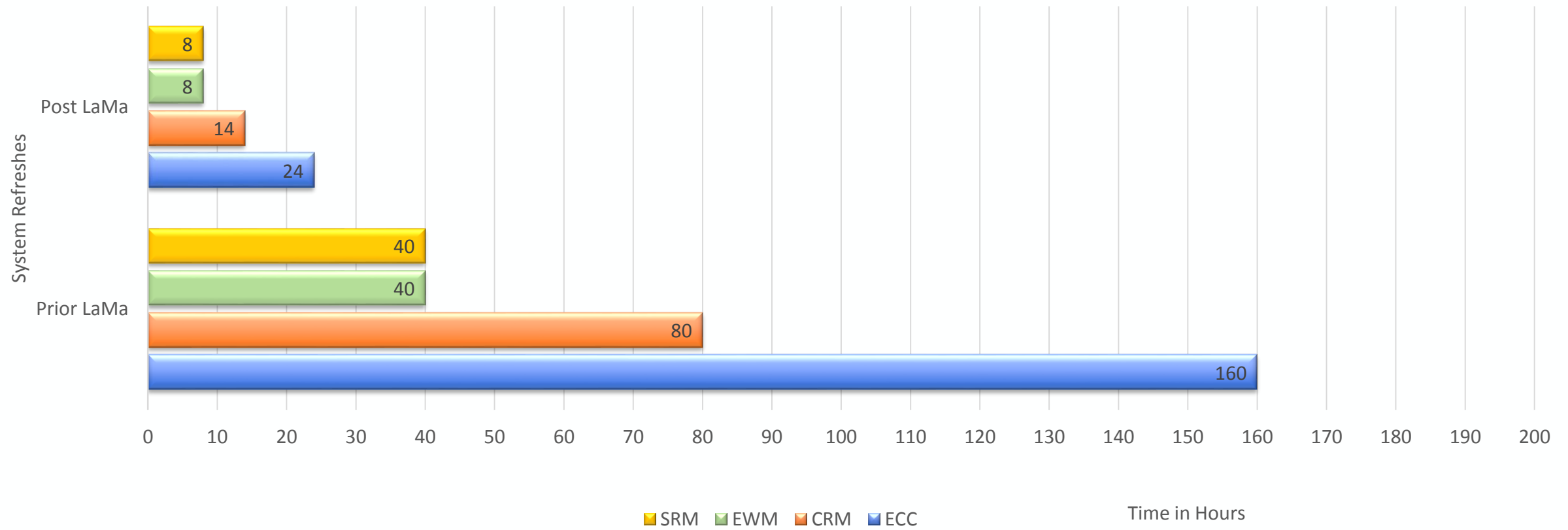
Multiple Selection for Logical Systems

Select Single Values | Select Ranges (8)

Lower Limit	Upper Limit
280_000	280_000
000001700	000001700
000001800	000001800
000001900	000001900
000002000	000002000
000002100	000002100
000002200	000002200
000002300	000002300

# Using LaMa system refresh

## System Combination of Refreshes



# Cost Saving

System Combination	No. of refreshes in 2018	Before		After			Savings	Amount
		Resources	Hours	Resources	Hours	Total Hours	Hours	<a href="#">1 FTE @126/hr.</a>
ECC/CRM/SCM/SRM	1	4	160	1	8	8	152	\$19,152.00
ECC / CRM (project landscape)	40	2	3200	1	8	320	2880	\$362,880.00
BW	8	2	640	1	8	64	576	\$72,576.00
GRC	2	2	160	1	8	16	144	\$18,144.00
BPC	2	2	160	1	8	16	144	\$18,144.00
EWM	1	1	40	1	8	8	32	\$4,032.00
SRM	1	1	40	1	8	8	32	\$4,032.00
<b>Total Saving</b>	<b>55</b>						<b>3960</b>	<b>\$498,960.00</b>

# LaMa – Benefits for System Refresh

- SAP ECC/CRM/SRM & EWM Refreshes completes in 24 hours compared to 5 days
- Automated the User lock/unlock during the system refresh and during the support package implementation avoiding the need for SAP security team to be available
- Enhancements to manage customer specific tables during system refreshes
- Consistent and high quality of system refresh process
- Saved over 3960 man hours in 2018, saving ~\$500,000.00

# LaMa – Benefits of Automated Operation

- Mass Operations of SAP systems start/stop
- Customized Unix scripts and integrated in LaMa to suspend & resume IBM Power High Availability (HA) cluster
- Production systems recycle time reduced from 45 minutes to less than 10 minutes with Mass Operation
- Automating the Cloud systems start/stop reduces the cost of maintenance
- Notification of system maintenance via emails



# Summary

- SAP LaMa has provided us with the ability to improve the system refresh process and achieve the goals.
- SAP LaMa helped to eliminate the repetitive tasks of managing the landscape from operation to system refreshes, RKS etc.
- SAP LaMa helps to keep up with an increasingly complex landscape operation
- Use an implementation partner to help you get it setup correctly

# Test drive SAP Landscape Management in the cloud with SAP CAL



## Test drive LaMa in the cloud with SAP Cloud Appliance Library (CAL)

- + Get quick hands-on experience with LaMa in the cloud (deploy & use within minutes...)
- + Comes with pre-configured demo scenarios and descriptions to get you started
- + This blog provides more information on how-to get started with LaMa solution using SAP CAL

<https://blogs.sap.com/2018/09/18/get-your-free-trial-for-sap-landscape-management/>

The screenshot displays the SAP Cloud Appliance Library (CAL) interface for the SAP Landscape Management 3.0 SP09, Enterprise Edition solution. The page includes the following information:

- Solutions /** (breadcrumb)
- Create Instance** **Copy Link** **Calculate Cost** (actions)
- SAP Landscape Management 3.0 SP09, Enterprise Edition (preconfigured solution)** (title)
- SAP Landscape Management (LaMa) helps you simplify and automate the management and operations of your hybrid SAP landscapes (on-premise, cloud) and it is the standard solution to manage SAP HANA based landscapes including SAP S/4HANA. This (preconfigured) solution contains sample data, that helps you explore the key functionality of SAP LaMa Enterprise Edition.** (description)
- SAP** logo and **Owned By: SAP SE** (owner information)
- Available In: Microsoft Azure, Amazon Web Services, Google Cloud Platform** (availability)
- Activated** status with a green checkmark and **Show Related Instances** link.
- INFO** **RECOMMENDED VM SIZES** **RELATED ACCOUNTS** **TECHNICAL DATA** (navigation tabs)
- Installed Products** section showing **SAP Landscape Management 3.0, enterprise edition**.
- Release Date:** Feb 18, 2019, 14:00:00
- Update:** 4 (Feb 27, 2019, 03:06:42)
- Getting Started Guide** and **More Information** links.

<https://cal.sap.com>

# Additional Product Information



Product Page including Customer <https://www.sap.com/lama>

Success Stories

Community Network <https://www.sap.com/community/topics/landscape-management.html>

Official Documentation <https://help.sap.com/lama>

Product FAQs <https://blogs.sap.com/2016/10/21/sap-landscape-management-faq-lvmlama/>

Partner Integrations <https://blogs.sap.com/2016/11/02/summary-of-sap-partner-integrations-with-sap-landscape-virtualization-management-2.x/>

Customer Presentations <https://blogs.sap.com/2016/10/19/customer-presentations-conferences-sap-lvm-lama/>

Training <https://blogs.sap.com/2018/03/12/lama.gettraining/>

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# Q&A

For questions after this session, contact us at

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